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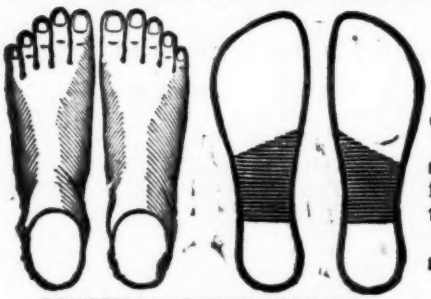

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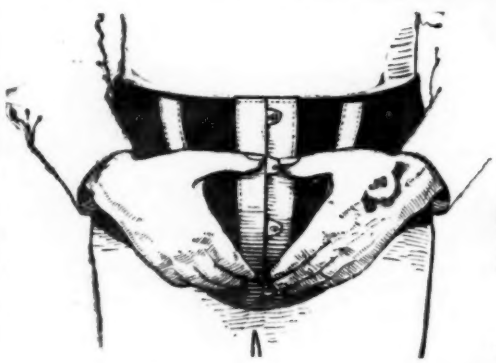

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A Lecture
ON
WOUND INFECTIONS AND THEIR TREATMENT.

Delivered (with Demonstrations) at the Opening of an Exhibition of Surgical Appliances for the Treatment of the Wounded held at the Royal Society of Medicine from Oct. 8th to 14th,

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(*Continued from p. 965.*)

PART II.

FROM the introductory studies which have up to this occupied our attention, I pass to the subject-matter proper of this lecture,

THE TREATMENT OF MICROBIAL INFECTIONS OF WOUNDS.

I would propose, despite the fact that this will sometimes carry me over ground traversed in my last lecture, to discuss with you, one by one, the various therapeutic procedures which have been employed or suggested for use. And then at the end it will perhaps be possible to draw up something in the nature of a general programme for the treatment of infected wounds in their different stages.

Let me tell you—for you will then see our road ahead—what are the therapeutic procedures we shall be dealing with. These are—and I enumerate them in the order which I shall follow—*treatment by antiseptics; treatment by surgical procedures; treatment by "physiological,"* or, as I would now for the sake of clearer definition wish to call them, *"phylacagogic" methods;* and, lastly, *treatment by vaccines.*

Treatment by Antiseptics.

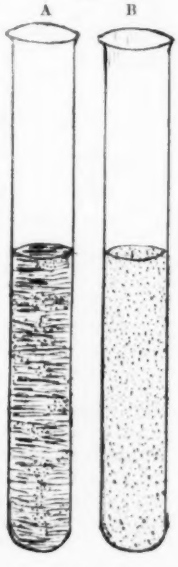
That one ought, where the organism is unable to deal effectually with an infection, to resort to the use of antiseptics seems to many minds to be perfectly clear *a priori*. Now when a proposition of this sort is said to be evident *a priori*, what this really means is, not that the proposition has been established by clinical experience, but that it has been demonstrated by laboratory experiments; and that we may confidently take those laboratory experiments as our guide.

But, of course, everything will here hinge upon the question whether the laboratory experiments which we trust accurately reproduce the conditions in the wound. Now the earlier experiments on antiseptics—and it is always upon antiquated experiments that the current doctrine of the day rests—did not even aim at reproducing the conditions in the wound. The antiseptics came into application, not as in the wound upon microbes enveloped in albuminous fluids, but upon microbes simply suspended in water. And again it passed as an axiom that if *in vitro* all the microbes were destroyed, then also all the microbes *in vivo* would be destroyed; and there was no thought that the microbes in the cavity and the recesses of the wound; and, above all, the microbes in the infiltrated or granulating wall, might escape destruction.

We have now in the matter of theoretical requirements made satisfactory advance. We now ask of laboratory experiments with antiseptics that they shall conform more closely to the conditions in the wound; and we ask in particular that it shall be kept in view that we have to deal in the wound with microbes enveloped in albuminous fluids; and that antiseptic solutions cannot come into direct contact with all the microbes which we wish to destroy. In other words, we now ask in connexion with every antiseptic for a testimonial of *bactericidal efficacy in albuminous fluids*, and for a testimonial of *penetrating power*. And in accordance with this we find in the prospectus of every new-hatched antiseptic this double certificate of character. It would plainly be beyond the scope of this lecture to look into all these certificates; but I think it will, perhaps, be useful to explain in a general way what sort of an attitude one ought to take up when traffic is made with such credentials.

On certificates of character which testify to the bactericidal efficacy of antiseptics in albuminous fluids.—It is familiar matter that the ordinary antiseptics (I shall return later to the case of some very special antiseptics) form chemical combinations indifferently with all native albumens, and not specifically with those which compose bacterial protoplasm. It is a corollary to this that whenever we have in an experiment an antiseptic, and albuminous substances, and microbes; it will, if we propose to sterilise our albuminous fluid, be necessary to cut down very severely its content in albuminous substances. And, again, it will follow from this that every promoter of antiseptics will, if he is conducting his experiments with any of the albuminous fluids of the body, find it to his advantage to employ serum rather than whole blood, and whole blood rather than pus. And, again, when he is operating with serum he will find it to his advantage either to operate with very little serum; or—and this amounts to the same—to use a large number of volumes of antiseptic to every volume of serum. This particular device is, one can see, legitimate or illegitimate according as the experiment is designed to elicit what strength of antiseptic is required for flushing out and irrigating a wound; or to create the impression that the circle has been squared; and that an albuminotropic antiseptic can do its office efficiently in the presence of albuminous substances. Let us reflect that if our ordinary antiseptics, instead of combining as they do with the albuminous substances of the blood, combined only with microbial protoplasm, it would be a perfectly proper policy to administer them intravenously in septicæmia.

FIG. 8.



Let us, however—for the above may be thought to savour of theoretical discussion—come down to the hard fact. It is, we have found, practically impossible, when employing as material pus from foul, suppurating wounds, to sterilise it by addition of any ordinary antiseptic.

Let me with the aid of these rough coloured diagrams (reproduced with shading instead of colour in Fig. 8) indicate what here stands in our way. In Fig. 8, B, I have a representation of a test-tube full of thick pus, and I have represented

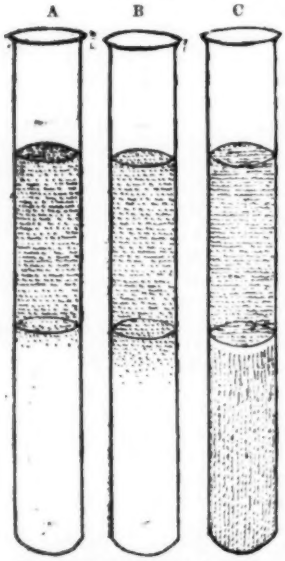
the thick albuminous pus by a uniform wash of deep yellow, and the contained microbes by a stippling of orange. In Fig. 8, A, I have represented in a very rough way by quite irregular hatchings of blue chalk the effect that would be obtained by an addition of antiseptic. You will appreciate that no matter how long I go on imposing blue strokes upon my yellow ground, there will, because my blue strokes will never fuse and run into each other, still remain over small islands of yellow stippled with specks of orange. Now we have here a rough representation of what occurs when we add an antiseptic to pus and shake it up. What that gives us is a system made up of islands of pus intersected by channels of antiseptic—the sphere of action of the antiseptic being in each case limited by confining banks of coagulated albumin.

When we dilute pus with very many volumes of an antiseptic solution, as we do in washing out a wound, we, of course, effectively sterilise.

Certificates of Character attributing to the Antiseptic Penetrating Powers such as would render it Efficacious in the Sterilisation of the Wound.

It will be well in embarking upon the discussion of this question to place it clearly before ourselves that when we speak of an antiseptic having *penetrating power*, we mean that the active agent will diffuse out into, and come into operation in, any contiguous fluid.

FIG. 9.



In A is represented a test-tube containing: above a watery solution of methylene blue, and below clear water. In B is represented a test-tube with a watery solution of methylene blue above and strong salt solution below. In C we have represented above a deep blue, and below a deep yellow fluid.

In other words, if I may illustrate exactly what I mean by the aid of this diagram (Fig. 9), we say that a chemical agent has penetrating power when applied in a fluid *a*, it passes out into, and produces its effects in, a contiguous fluid *b*—and let me, for the sake of facilitating exposition, call *a* the *disbursing fluid*, and *b* the *recipient fluid*.

Having recognised that penetration is only diffusion under another name it will be plain that we shall be able to consider the question of penetration without travelling outside familiar ground. We know in connexion with chemical agents generally that their rate of diffusion, i.e. the rate at which they will pass out from a disbursing into a recipient fluid, will—exclusive of the influences exerted by temperature, extent of surface of contact, and such like—be determined by the concentration of the chemical agent in the disbursing fluid, and the receptivity of the recipient fluid—in other words, it will depend upon the respective *plenitude* and the *avidity* of the contiguous fluids.

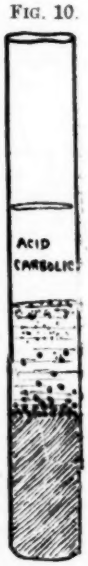
Now, in the case of the ordinary antiseptics which are employed in wounds we have chemical agents, which, owing to their toxicity and escharotic properties, are of necessity brought into application only in dilute solutions; and, moreover, many of these chemical agents are not very soluble in water. By consequence we are when dealing with ordinary antiseptics confronted with conditions which are anything but favourable to diffusion. They will resemble those roughly indicated in the diagram on the blackboard (reproduced with stippling for colour in Fig. 9, A), where we have a dark blue disbursing fluid superposed upon a colourless recipient fluid, and have below the line of contact of the fluids a comparatively narrow zone of paler blue representing a slight carrying over of colour by diffusion.

But in reality the conditions in the wound, where our recipient fluid is instead of water a concentrated albuminous fluid, much more nearly resemble those depicted at C (Fig. 9, C). Here we have, as before, our blue disbursing fluid, but there has been substituted for the colourless watery recipient a deep yellow fluid stippled with orange, representing pus with scattered microbes. And you see what we get. Instead of the narrow blue zone which diffusion gave us in Fig. 9, A, we have now a much narrower zone which is—for yellow quenches blue—nearly colourless. I think you will recognise that under conditions such as are here postulated, the prospect of getting any penetration which would be worth while, may be abandoned as hopeless.

But perhaps you will suggest that one ought not to place too much confidence in demonstrations conducted on blackboards with coloured chalks; and you would wish the experiment transposed from the blackboard into the real world in order to see whether it would also apply there. Let me suggest such an experiment.

I will suppose that we have as our disbursing fluid a dilute solution of nitrate of silver standing over a recipient fluid consisting, in the one case, of water derived from a fresh-water pond; and, in the other case, of sea water—both peopled with living organisms. You will discern what would then happen. In the case of the pond water, the nitrate of silver will slowly diffuse into it: killing, as it is carried in, all the living organisms it encounters. In the case of the sea water, the effect would be quite other. Where the two fluids meet, the nitrate of silver would be thrown down and rendered inert. And below, the marine life would go on absolutely unaffected.

FIG. 10.



But you will wish for actual experiments conducted with an antiseptic, and blood fluids, and leucocytes, and microbes such as we have in the wound. Let me therefore show you here in the form of a rough diagram the results of typical experiments—experiments carried out with blood implanted with streptococci, and then centrifugalised and allowed to clot in emigration tubes, and then covered in with carbolic acid in strengths of from 1 in 50 to 1 in 20. (Fig. 10.) You will see that we have here in our white clot, and—I want you to note—quite close up under the covering layer of antiseptic, colonies of streptococci derived from those we have implanted. And below—as you

discerned would happen in our sea water—you have the living elements going about their avocations quite unaffected. The leucocytes have, as you see, emigrated into the white clot; and they have, in point of fact, been hunting down and ingesting the microbes. And I see no reason to doubt that the results would have come out just the same if we had in our experiments used instead of carbolic acid any other of the antiseptics which are employed in wounds.

With this, I think, we have, in connexion with the sterilising and penetrating power of ordinary antiseptics, got before us all the really vital points in the evidence furnished by laboratory experiments. And let me now—for you will bear in mind that the advocates of antiseptics rest their case almost exclusively on the data of laboratory experiments—try to summarise for you what these experiments really teach.

And there are here, as I see the matter, two distinct issues. The *first* has reference to the effect exerted upon the microbes of pus which are removed by washing; the *second* to the effect exerted on the microbes which are left behind in the wound.

In connexion with the first of these issues, it has been shown that while it is all but impossible to sterilise undiluted pus by any addition of antiseptics, it is quite practicable, by diluting and mixing the pus thoroughly with many times its volume of an antiseptic fluid, to kill all the microbes.

But, note, to kill these microbes is simply a work of supererogation; for they are in any case destined to go down the drain. And, moreover, pus is not in the same case with typhoid stools, which we might hesitate to put down the drain unsterilised.

Coming, then, to the microbes we have really to combat—those that washing does not remove from the wound—it will be clear that these will be killed off only so far as the antiseptic may possess penetrating power. And we have seen how the case stands with regard to this. We have appreciated that our antiseptics are incapable of penetrating through anything more than the very thinnest film of pus. They will therefore fail to kill the microbes which washing does not dislodge from the blind passages and cul-de-sacs and pockets of the wound. And *a fortiori* the antiseptic will not come into operation upon the microbes in the solid barriers of albuminous substance provided, in the early stages of the wound, by exposed muscle and connective tissue, and, in the later stages, by infiltrated walls or granulating membrane.

And what holds true of the suppurating wound, would clearly hold true also of that filled with blood clot. The antiseptic will, if it exerts any influence at all, exert it here only at the particular spot to which it is applied.

I am not at all sure that the kind of evidence I have just tried to summarise—or, indeed, any array of laboratory experiments—could convert from his beliefs the man who knows with *a priori* knowledge that antiseptics must be useful in wounds. And with regard to that type of man I feel that, despite the fact that his faith in antiseptics is really based upon laboratory experiments, he will, now that the old laboratory experiments have been invalidated by the new, desire to appeal from these to the tribunal of clinical experience. And he will, I take it, desire to discover by cross-examination whether clinical or bacteriological investigation has not furnished data which might tend to show that the course of wound-infections has sometimes been favourably modified by treatment with antiseptics.

On the important principle of logic which is here raised—i.e., on the issue as to how far therapeutic measures ought to be adjudicated upon by laboratory methods, and how far by an appeal to clinical observation—I would here only say this. What we are, in difficult issues such as that in which we are here involved, concerned to arrive at is a verdict based on unambiguous evidence: and I feel confident that clinical observation cannot safely adjudicate upon a therapeutic measure unless it happen to give either outstandingly good or outstandingly bad results. Where the results are neither brilliantly successful nor the reverse—and antiseptic treatment of wound infections is precisely an instance in point—I submit that we shall be well advised if we guide ourselves, when this is unambiguous, by the verdict of laboratory experiments.

With thus much by way of protest and explanation, I will try to put before you the clinical evidence as I see it; and to resume for you the data of our bacteriological examinations of wounds treated with antiseptics.

I can put what I have to say in a very few words. I have not myself come across—and I have the permission of all my fellow-workers to say that they also have not come across—any satisfactory clinical or bacteriological evidence of the utility of antiseptics as employed in infected wounds. In connexion with this, let me say that working as we have been for the last year in the largest base hospital in Boulogne, we must, I think, have watched and examined bacteriologically very many thousands of wounds—to say nothing of our having conducted the bacteriological examinations in no less than four long series of clinical experiments undertaken to put to the test the confident prognostications of reputable promoters of this or that antiseptic. And let me also say here that the opinion I have just expressed—i.e., the opinion that, judged by its clinical results, the antiseptic treatment of infected wounds is of quite doubtful utility—is that which is, I believe, held by the very large majority of those who have had prolonged practical experience in this war.

I am well aware that also contrary opinions have been expressed. I would, however, submit that these should be very largely discounted. For the more part they are opinions expressed by persons possessing a very limited experience and unfamiliar with the course the wound follows when left to itself. Moreover, the observers here in question were, as I think, deceived by the fallaciously favourable appearance of the wound in the stage that precedes the advent of suppuration. Coming to those favourable opinions which have, as I hear, been expressed by a few experienced and very competent observers, I would submit that it is possible, that credit may have been given to the antiseptic, where it ought really to have been given either to the menstruum in which it was applied; or to incidental circumstances attendant upon the treatment. Thus, for instance, continuous irrigation practised with antiseptic solutions would effectively wash out the wound and keep it constantly moist; a hypertonic menstruum used as an excipient for the antiseptic would act as a lymphagogue; peroxide of hydrogen would effectively assist in the evacuation of the pus; carbolic acid or other antiseptic used in the form of hot fomentations would bring heat and moisture to bear; and no doubt many different varieties of antiseptic would induce temporary hyperæmia. I think it will be seen that favourable

results occasionally manifesting themselves after antiseptic treatment, might quite well be interpreted in the sense here suggested.

So far we have considered in connexion with the clinical data only the question whether the antiseptic has had any beneficent effect in the wound. Let us now turn the leaf, and see whether there are entries also on the debit side; and let us here consider the *effects produced in the wound itself*, dealing afterwards with those produced on the healthy skin in its neighbourhood. In connexion with this let me first emphasise the fact that disastrous results—I am thinking more particularly of the development of gaseous gangrene—supervene when antiseptics made up in viscid or semi-solid excipients are introduced into the wound. For this result the excipient which confines the discharges and imprisons the infection would seem to be primarily responsible.

It is, however, not only antiseptics in unsuitable menstrua which arrest the outflow of lymph and imprison the infection. With perhaps the exception of carbolic acid employed in concentrated form, all antiseptics in their degree, and strong antiseptics in particular, would seem, by coagulating the albuminous substances on the surface of the wound, to exert this prejudicial effect.

Coming now to the *application of antiseptics to the skin surface in the neighbourhood of the wound*, we have, of course, here a procedure which has exactly the same aims as the preparation of the skin for operation, except only that it is here foreseen that the wound will remain open.

The usual procedure for the sterilisation of the skin in field ambulances is to paint strong iodine all round the wound, and then—plant for sterilising dressings not being available so far to the front—to cover in the wound with cyanide gauze. This in many cases is followed by results like those which used to be obtained when carbolic fomentations were used as a prelude to surgical operations. There is produced—and this applies quite generally in connexion with every application which "irritates the skin"—first, reddening of the epidermis; then, effusion and blistering; and then, there develops in the blisters a luxuriant growth of serophytic microbes. In other words, by our misdirected energy we cultivate at the very doors of our wound, upon the very area of skin which we intended to keep free from microbes, a copious harvest of streptococci and staphylococci.

This, however, has been of the nature of a digression, and I must now, before saying something about a fundamentally different variety of antiseptics, come back and try to make clear what is the general conclusion which emerges from the clinical study of the effects of antiseptic treatment. It can be put into a sentence. The data of clinical observation, such as they are, not only confirm the verdict of the laboratory as to the inefficacy of antiseptic treatment; but they suggest that such treatment may sometimes be not only useless but prejudicial.

Antiseptics which are, instead of Indiscriminately Albuminotropic, specifically Bacteriotropic.

I have now to say just one word about a kind of antiseptic which concentrates its chemical energy upon the microbe; instead of, like the ordinary antiseptic, expending it wastefully upon the albuminous substances in which the microbe may be embedded. Those of you who have followed the development of "chemotherapy" will immediately perceive that I refer to *salvarsan* and ethylhydrocuprein hydrochlorate[1] (now known as *optochin*) and will appreciate that, if these chemical agents can be shown to exert a powerful bactericidal effect upon pyogenic organisms, and in particular upon serophytes; they might perhaps usefully be applied both directly in the wound and also by the channel of the blood: reaching in these ways all the microbes in the body with the exception only of those embedded in dead spaces and infiltrated tissues.

We have made in connexion with this subject-matter as yet only preliminary researches; and I do not here propose to say anything more than that my fellow workers, Captain S. R. Douglas and Lieutenant A. C. Inman, working the one with salvarsan and neosalvarsan, and the other with optochin, have found that these kill off the streptococcus in serum, and that optochin in particular kills the streptococcus in serum in very high dilutions.

TREATMENT BY SURGICAL PROCEDURES.

A long series of surgical procedures all having reference to the treatment of wound infections might quite properly come up for consideration here if this were a treatise instead of an introductory lecture. Let me, however, just run over the list, indicating in connexion with each the place that it would take in the treatment of the wound infections. We have, *first*, the opening up of the wound, and the incision of the tissues undertaken to get drainage for imprisoned infections; *secondly*, the washing out of the wound and the irrigation of the walls with therapeutic fluids; *thirdly*, the immobilisation of the limb for the avoidance of auto-inoculations; *fourthly*, the ablation of the heavily infected and infiltrated walls and floor of the wound; and, *fifthly*, the secondary suturing of the wound for restricting the area of exposed and infected surface, and closing the wound when the infection has been overcome.

The first of these procedures I have already treated of. Its rationale and the methods of making it really effective were considered in a Memorandum on Wounds which was officially circulated to the Medical Service of the Army and which was published in THE LANCET of April 24th, 1915, p. 873.

The second and third procedures—those for the irrigation of wounds and the splinting of fractured limbs—form the subject matter of the demonstrations which are to be given in this exhibition.[2]

The principles involved in the so-called "excision" and "secondary suture" of wounds I propose here very briefly to consider.

Ablation of the Heavily Infected and Infiltrated Lining of the Wound.

The customary procedure in connexion with wounds is to remove only those portions which are sloughing; and to amputate, where a limb is involved, only that portion which is deprived of its blood-supply, or quite hopelessly infected. To Colonel H. M. W. Gray is due the credit of pointing out and enforcing by a long series of cases successfully treated under his supervision in the military hospitals at Rouen, that it is possible in suitable cases to abort wound infections by the excision of the infiltrated wall and floor, the operation being completed by sewing up the wound immediately,

[1] In connexion with this drug, vide the author's Treatise on Pharmacotherapy and Preventive Inoculation Applied to Pneumonia in the African Native, Part I. and Appendix I.

[2] See the Memorandum by the author on the Employment of Bandages for the Irrigation of Wound-Surfaces with Therapeutic Solutions, and the Draining of Wounds, THE LANCET, Oct. 16th, p. 879.

or after treatment with hypertonic salt solution. I may explain that the kind of cases which Colonel Gray selects for treatment by excision are scalp wounds and what we may call "*gouged out*" and "*punched in*" *wounds* of soft tissues.

The theoretical considerations which commend the procedure of Colonel Gray are that it removes heavily infected portions of tissue which, though they could be brought back to a healthy condition, are for the moment incapable of contending successfully with infection. And, above all, the method holds out a prospect of immediate victory over the infection; and, of course, practically immediate convalescence.

There, however, suggests itself in connexion with the procedure the plaguey question as to what amount and kind of microbial infection we can allow ourselves to shut up inside a wound. This is the issue which confronts us everywhere in connexion with secondary suture.

Secondary Suture of Wounds.

That a deep wound when once infected must be allowed to granulate up from the bottom, and that a surface wound must be allowed to close by the growing in of skin from the sides are maxims which would be in their proper place in a system of surgery which aimed at doing all it could to delay healing and keep the patient in hospital for the longest possible time.

On the other hand, it might quite well be imprudent to embark deliberately upon a policy of sewing up microbes in wounds to accelerate healing.

This is the kind of dilemma which sooner or later confronts us in connexion with every wound. To resolve it we must sit down and take thought and ask ourselves what precisely are the risks we have to take; and whether there are not precautions to be adopted; and whether we really are, in the matter of the closure of the wound, irretrievably condemned to a policy of inertia and inaction.

Let us place before ourselves first these facts. An *infection of subcutaneous tissues* is always of more serious import than a mere surface infection. There will always be something unfavourable either in the general condition or in the histological conditions when microbes succeed in maintaining themselves in the tissues. Here at least the leucocytes and the blood fluids ought to be able to hold their own. Exactly the contrary holds true of *surface infections*. On denuded surfaces, no matter how healthy the condition, the microbes, though they may sometimes have to struggle, will always find means to maintain themselves. We may, I think, attribute this to the circumstance that on an exposed surface the leucocytes are subjected to every kind of uncongenial condition—to aerobic surroundings, to desiccation, to a tryptic or diminished antitryptic environment, and, who can tell, perhaps also to conditions of famine.

We now see that where we have an infection of tissues—i.e., a form of infection which would, if conditions had been favourable, have been driven out, and been converted into a mere surface infection—we shall be taking a serious risk if we sew up the wound. For that would be to follow leisurely and with deliberation the disastrous practice of those who in the earlier period of the war in the hospitals at the front precipitately sutured infected wounds, or securely sealed up imprisoned infections by resorting to escharotic or gluey antiseptic applications.

On the other hand, we see that, if we are dealing with a purely surface infection, it will be possible, by bringing the opposing surfaces of the wound into intimate contact, to procure for the leucocytes and blood fluids those more favourable conditions which prevail, in the interior of tissues; and, by procuring these, to contribute to the destruction of the microbes.

But clearly our decision as to whether we may, or may not, bring the edges of the wound together ought not to be determined solely by whether we are dealing with an imprisoned, or a surface infection. There will in connexion with surface infections be other factors to be taken into account.

There is, for instance, a great deal of sound commonsense hidden away in the maxim, that an infected wound which goes down into the depths must be allowed to granulate up from the bottom. The lessons which that precept enforces are, first, that if we allow dead spaces to develop in closed wounds we must expect to find the infection go ahead therein; and, secondly, that, since pus will gravitate downwards, dead spaces will tend to develop at the bottom of the wound, while the upper part unites and converts the dead space into the abscess sac. Of all the mechanical conditions which have to be secured in secondary suturing of wounds, the most important will clearly be the avoidance of such dead spaces.

There is another important consideration to be kept in view—and this time it is not a mechanical consideration. We must expect success or failure in secondary suturing to depend in large measure on the condition of the surfaces, and the number of microbes on those surfaces. Where we have very few microbes and a profusion of active leucocytes we may confidently look forward to success. Where we have a large population of microbes and disintegrated leucocytes it will be only reasonable to expect to fail.

This much by way of general principles. And let us now turn and inquire how these can be applied in practice, and by what methods we ought to proceed in deciding whether a wound is in fit condition to be closed down. We shall have first to certify ourselves that we are dealing only with a surface infection; and then we shall require a method of examination to tell us what is the condition of the leucocytes, and the number of microbes on the surface of the wound.

The first of these points is resolved by a mere clinical examination. As long as the floor and walls of the wound are still indurated we can be sure that we are still dealing with an imprisoned infection. On the other hand, when we have lying naked before us in the wound a system of lymph spaces communicating freely with one another, filled in with clear fluid, and fed from full capillaries, we then know that we have got rid of the imprisoned infection; and that if any infection still lingers it is a purely surface infection.

There remains the question as to what number of microbes have to be dealt with on the surface of the wound, and what force of active leucocytes we have there at disposal. It will probably in the case where the walls and the floor of a wound have been freshly resected—provided always that this has been done in a workmanlike way—be unnecessary to insist upon such inquisition. But where we are dealing with a granulating wound whose edges have not been refreshed it will assuredly be required.

The method of obtaining the information is quite simple. We first prepare a number of cover-glasses

by coating them on one side with a layer of agar or serum (serum is preferable) and then letting them dry. We then bring the coated side down upon the surface of the wound. And we make in this way (using, of course, a number of cover-glasses) a series of impression preparations. We now fix and stain either by the method of Gram or with carbol thionin. Microscopic examination then tells us whether we have few or many leucocytes; and whether the leucocytes are degenerated or well preserved.

And a concluding word may now be said on the technique of closing in the wound and on the procedure to be followed.

Except possibly in cases where we pass directly from the excision of the wound to secondary suture it will be well always to preface the operation by phylacagogic treatment conducted upon the lines laid down in the next section of my lecture, and controlled, of course, by the making of impression preparations.

Where we are dealing with a deep and extensive wound it will be well to undertake the work in stages and to content oneself at first with bridging and subdividing the wound by bringing the walls into application by sutures passed in from the skin from each side deep into the tissues. And I may add in connexion with such sutures that they ought, in order to prevent extension of the microbes along their track, to be withdrawn at the earliest possible moment. Where bridging operations have been undertaken, the interspaces between the connecting bridges ought still to be irrigated and drained. Where it is a question of the closure of large gaping "gouged-out" wounds, it will be well to choose for the patient such a position as will minimise the gaping of the wound and the strain upon the sutures. Where large surfaces of skin have been carried away grafting ought to be resorted to; or the skin ought to be undercut, and the liberated flaps drawn over the wound by strips of adhesive plaster. Where a limb has been amputated by the flapless operation, the sleeve of skin ought to be slowly drawn down over the stump by an extension apparatus.

III.—TREATMENT BY PHYLACAGOGIC METHODS.

When I was discussing with you the clinical results obtained by the antiseptic treatment of wounds I drew your attention to the fact that with this a variety of physiological stimuli were brought into application, and that the good results which were upon occasion witnessed might quite well be credited to these.

Now, of course, physiological stimuli are in connexion with wounds applied, not only incidentally to antiseptic treatment, but also of set purpose as therapeutic agents. Dry or moist heat is brought into application; ether is introduced into the cavity of the wound; stimulating ointments and lotions are applied; or, as the case may be, the wounds are uncovered to air; they are exposed to sunlight, or electricity and radium are exploited: each of these measures being resorted to with a more or less vague idea that the particular form of stimulus in question will directly or indirectly assist in combating the wound infection.

So far as I can discern, all these are forms of treatment—and the same holds true also of the surgical procedures we have considered above, of the methods of Bier, and, of course, of saline solutions and vaccines—which are capable of bringing the protective elements of the body—i.e., the blood fluids and leucocytes—into application in the wound. And I would submit that they can be useful only so far as they serve as—let me suggest the word—*phylacagogic* agents.

We ought therefore to give up employing these agents as fetishes, and ought to prelude their use by a careful study of their physiological action.

This field of study being so endlessly wide I propose here to confine myself to the study of strong and weak salt solutions. We shall see that we have in these *phylacagogic agents*—in hypertonic saline solution a *lymphagogic*; and in physiological saline solution a *leucocytagogic* agent.

Physical and Physiological Action of Hypertonic Salt Solutions.

Hypertonic salt solutions exert three kinds of effects: a physical effect; a physiological effect; and an effect on the condition of the wound and the bacterial infection. Let me deal first with the physical action, for it was this which I had chiefly in view when I suggested the employment of hypertonic solutions in the treatment of infiltrated tissues which were the seat of bacterial invasions.

Physical action of strong saline solutions.—I can perhaps most conveniently introduce what I have to say with reference to the physical action of strong salt solutions if I take up again the discussion of the phenomena of diffusion at the point where I left off when I was discussing with you the penetrative powers of antiseptics.

What we were there considering was the conveyance of the chemical agent outwards by diffusion from the disbursing into the recipient fluid; and we did not then need to concern ourselves with the return movement from the recipient into the disbursing fluid. But in connexion with every diffusion there is always a process of barter and exchange: so that when we have, as in Fig. 9, A, as our disbursing fluid water containing a colouring material, and as our recipient fluid clear water; there is, in point of fact, not only a passing out of colour into the recipient fluid; but also a return flow of water; and, as a result, a certain dilution of the disbursing fluid.

It will subserve the purposes of exposition, and perhaps help to call up in the mind clearer pictures, if, speaking as we do of the conveyance of the chemical agent into the recipient fluid as *diffusion*; we may call the conveyance of the water (or other excipient) into the disbursing fluid, *infusion*.

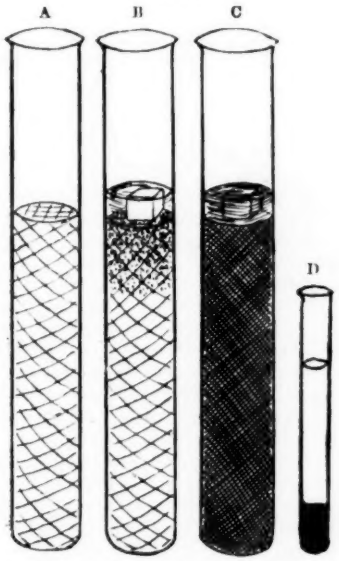
Let us now look—for this will carry us a step further from Fig. 9, A to Fig. 9, B. Here, while the coloured fluid in the upper part of the test-tube remains as before, strong salt solution has at the bottom of the tube been substituted for clear water; and we have now a double process of diffusion—a diffusion of colouring matter downwards into the salt solution, and a diffusion of salt upwards into the coloured water; and along with this we have also infusion into each fluid. This will give, on either side of the surface of contact, a broader zone of mixture; and you have in Fig. 9, B below the junction of the coloured and colourless fluids a broader band of stippling representing colour.

We can by the aid of a very simple experiment satisfy ourselves that there is a much greater indrawing with a strong salt solution than with a weak solution or simply water. We take a capillary pipette, seal it at the end, fit on a rubber teat, and then squeezing this with the fingers so as to get up a positive pressure in the interior, introduce a small portion of the wall, about half way down the

stem, into the flame of a by-pass. The glass will, as soon as it softens, blow out here and give us a lateral opening. We now resect our capillary stem at some little distance above, and again some little distance below, this opening. Having provided ourselves with such tubes we fill in one with strong salt solution and another with water, and then pour a little watery solution of methylene blue into a Petri dish or other shallow, flat-bottomed vessel. This done we take up first one, and then the other, of our capillary tubes. We seize it in the middle with a pair of forceps; hold the central orifice uppermost and the two limbs horizontally; and in this position immerse for a matter of a second or two into the coloured fluid. We then wash the outsides and compare the two tubes.

In the tube of water there will be three narrow, and in the tube of salt, for there is here more indrawing, there will be three very broad bands of blue: one occupying the middle and the others the ends of the tubes.

FIG. 11.



A, a test-tube filled with water-agar serving as a control to B and C.
B, a test-tube filled with silver nitrate water-agar upon which has been imposed a cubical block of sodium chloride, showing the precipitation of the silver salt in the interior of the agar, and on the surface of the agar the fluid which has been drawn out.
C, a test-tube containing water-agar in which blood has been incorporated on the surface of the agar; a cube of salt and the turbid blood-stained albuminous fluid which has been extracted by the action of the salt is seen.
D a small test-tube showing the albuminous precipitate thrown down on boiling a sample of the fluid obtained from C.

And let me show you also another experiment which brings clearly before the eye the drawing power of salt. I have here two test-tubes filled in each case to a depth of 3 or 4 centimetres with a watery solution of methylene blue; and standing in these test-tubes I have two pieces of glass tubing, open at both ends and packed with moist cotton-wool[3]; and, lastly, in the one tube I have at the top of the cotton-wool a layer of salt. These pieces of tubing have been standing, as they are standing now, since last night. I now lift them out, and you see that here again the methylene blue has been drawn far up into the tube where we have the salt; while it has in the companion tube been carried in only a very short way.

With this we have come some little distance on the way to an understanding of the physical action of hypertonic salt solutions applied in wounds. This further series of test-tube experiments (reproduced in Fig. 11) will, I think, show you exactly what happens.

I have here a tube of water agar (Fig. 11, A). That is to say, I have dissolved in the distilled water, which is here going to serve as a recipient fluid, a sufficiency of agar to set it into a firm jelly. And I have added also a little trace of nitrate of silver. Into the next tube (Fig. 11, B)—a precisely similar tube—I introduced some 12 hours ago a cube of sodium chloride, imposing it upon the surface of the just moist jelly. And you here see the result. The sodium chloride has diffused into the water agar to a considerable depth, discolouring the silver salt. But the important thing to note is the counter movement. Water has been drawn out from the jelly, and we have now round what remains of the pellet of salt, as you see, a layer of fluid a centimetre or a centimetre and a half in depth.

This is the particular effect which I set out to get when I suggested the employment of hypertonic solutions as a dressing for infected surfaces. I expected to get that combination of diffusion and infusion which we have under our eyes here—in other words, a process of barter in which salt and water should be exchanged, not in volumetrical equivalents, but, as you see here, in the ratio of very many volumes of fluid for one of the solid.

Let me try to make plain another point. The whole question of diffusion and infusion is to the ordinary medical man and biological student complicated by ideas connected with osmosis: his mind being taken up in particular with the idea that crystalloid substances can, and albuminous substance cannot, traverse a so-called vegetable or animal membrane. In fact, some have come to believe that it is the interposition of a membrane between the recipient and disbursing fluid which calls into existence the attractive forces of salt for water and all the phenomena of infusion; or, to put it in other words, that it is the interposition of the sieve which confers upon the salt the power of drawing water to itself. It is this confusion of thought which has inspired the criticism: that while hypertonic solutions may be competent to draw fluid out from the walls of a wound, the fluid thus extracted will by theoretical necessity be a fluid deprived of all its albuminous substances, and with these of all its antibacterial powers.

The test-tube I now show you demonstrates to the eye that the theoretical deduction here in question is quite unfounded. You see here (Fig. 11, C) a tube of water agar into which I have incorporated a considerable amount of blood. I have dealt with it in precisely the same way as with the tube of silver nitrate agar; that is to say, I imposed upon it yesterday a cube of sodium chloride. You will see for yourselves that the salt has here drawn out from the agar a very considerable amount of a turbid blood-stained fluid; and when I take a sample of this and boil, you will see that we obtain a very heavy precipitate of albuminous substances. (Fig. 11, D.)

I think we may feel reasonably confident that this is exactly what occurs in the wound. And at

[3] The actual procedure employed was to fill in the cotton-wool, to immerse in water, and then to remove the superfluous fluid by centrifugalisation.

any rate we may be sure that neither in the earliest stage of the wound, where the tissues lie exposed; nor yet in the later stage, when the walls are infiltrated; have we in the wound, any more than we have here in this test-tube, anything in the nature of a membrane which could filter out albuminous substances.

Arising directly out of the physical properties of concentrated salt solutions is another point which has a very important bearing on the therapeutical action of these agents. We have seen in connexion with antiseptics that inasmuch as they have as good as no penetrative power, they will exert their effect only at the immediate point where they are applied; and, in the case where the antiseptic marches with an albuminous fluid, only on the face where the two fluids come in contact. In other words, the antiseptic will not diffuse into, and come into application in pus held up in the upper reaches or recesses of wound, nor even in islands of pus encompassed by antiseptic fluid.

Now the exact contrary of this holds true of strong saline solutions introduced into the wound. No sooner are they introduced than the sodium chloride—for it is, of course, highly diffusible and is not quenched by antiseptics—will radiate out by diffusion through all the fluids of the wound. (In an experiment in which a tube full of water agar was inverted in a shallow receptacle of 4 per cent. salt solution we found that diffusion carried the salt up 4½ centimetres in a night.) We may therefore picture in our mind's eye, in connexion with strong saline solution applied to the mouth of a wound, that the salt will very soon, in the lower reaches of the wound, attain a high concentration and act as a lymphagogue; and that afterwards it will come into operation in the upper reaches in a dilute, but perhaps still therapeutically valuable, form.

But let us note that this will apply only if the concentration of the saline solution is maintained throughout. Where the salt solution is applied in the form of a damp pad, and is then very rapidly diluted by the exudation, we shall get, but only very temporarily, a hypertonic solution in the lower reaches of the wound, and after that we should obtain only the same effects as with an isotonic salt solution.

Finally—and this is a point which may upon occasion have a practical interest—let us remember that 4 per cent. salt solutions have a specific gravity equivalent to that of the serum; and more concentrated solutions, of course a higher specific gravity. It will therefore be theoretically possible by availing ourselves of gravity to get strong saline solutions directly to the bottom, not perhaps of a wound filled with pus, but certainly of a wound in which we have only blood clot and serum.

(To be continued.)

BRISTOL HEALTH COMMITTEE AND THE SLAUGHTER OF ANIMALS.—At the last meeting of the Bristol health committee a considerable discussion took place upon the question as to the old methods of killing beasts and pigs being superseded by the "humane killer" and the "captive bolt." Eventually it was decided by a large majority of the members that the methods adopted in the slaughter-houses should be optional, and another resolution was also passed that no permission should be given to constables or the officers of the Royal Society for the Prevention of Cruelty to Animals to attend at the slaughter-houses.

The Bradshaw Lecture

ON

NERVOUS AFFECTIONS OF THE SIXTH AND SEVENTH DECADES OF LIFE.

Delivered before the Royal College of Physicians of London on Nov. 2nd, 1915,

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PART I.[1]—DISEASES OF THE SPINAL CORD.

Mr. PRESIDENT AND FELLOWS,—My first and most pleasant duty is to offer my best thanks to Sir Thomas Barlow and to express my deep sense of the honour that he has conferred upon me by asking me to give this lecture, and also to associate with him in my acknowledgments the present distinguished occupant of this chair for his approval of the subject which I have taken.

In selecting the sixth and seventh decades of life it may be thought that a somewhat arbitrary division of age has been made. On consideration, however, it will be seen that this period has certain marked characteristics of its own. One might have taken as the lower limit the age of 45, which Dante fixed as the end of the period of youth, but that would involve in most women the inclusion of the climacteric, which I thought better to avoid. It may be held, although there are many notable exceptions to the contrary, that the period of the greatest activity of the originative and creative faculties is over by 50, yet the ensuing years are those in which experience is ripe and judgment most sound, and in which use has made the performance of difficult tasks easy and certain. Though it is true that the most original work is not done between 50 and 70, yet a very large share of the skilled work of the world, that which requires the full development of the mental powers, is carried on by persons of this age. It is, therefore, not unimportant to consider what diseases tend to cut short or to destroy the usefulness of these years, and, conversely, from what diseases they are exempt. The beginning of this period is that of full maturity, and the end brings us to the advent of old age.

Many nervous diseases run a very long course, and we should therefore expect to find that the nervous affections of this period will be made up of some which began at an earlier age and of others, fewer in number, whose incidence is entirely contained within it. It will be convenient to consider them separately, noting their incidence and also any peculiar features or modifications in their course which may occur at this time of life. I do not propose to include mental affections.

SPINAL CORD.

The diseases of the spinal cord between 50 and 70 years of age are both numerous and important. Tumours of the cord present no special features at this age; secondary metastases in the cord itself to cancer elsewhere are very rare. I have seen two examples of secondary growths in the cauda equina; the primary growths were in the breast and prostate respectively.

[1] Part II., Diseases of the Brain, will be published in a subsequent issue of THE LANCET.

Myelitis.

Myelitis is not a common disease after 50. In 156 cases reported as myelitis, acute or subacute, excluding pressure-myelitis, 18 per cent. occurred after this age. The age given in hospital reports probably represents very nearly that of onset, as chronic cases with secondary degenerations would come under other designations—e.g., spastic paraplegia. This relative infrequency after 50 might be expected from the common causes of myelitis, which are chiefly some acute infection or intoxication in which the myelitis may be either primary or secondary, and syphilis. No doubt syphilis is the cause of a larger number of cases than is generally recognised. Taylor and Buzzard[2] state that syphilis is responsible for the great majority, probably 80 per cent., of cases of myelitis. The term myelomalacia is more accurate than myelitis for many cases. After 50 the infective disorders are rare, and if the view stated below is correct that spinal syphilis is also uncommon after this age, the relative infrequency of myelitis after this age is accounted for. One might, perhaps, anticipate an influx of cases of myelitis, or rather myelomalacia, in later life, due to vascular occlusion from arterial degeneration, but large patches of softening in the cord seem rarely to result from this cause; the contrast in this respect with the frequency of areas of softening in the brain is remarkable. Arteriosclerosis in the cord seems to affect the smaller vessels and to produce small sclerotic foci or diffuse areas of degeneration.

Lesions of the Posterior or Lateral Columns.

The diseases of the spinal cord which are especially characteristic of this age are diffuse lesions of the posterior or lateral columns, mostly degenerative. These are the cases formerly grouped together as the "combined scleroses." In some symptoms due to disease of the lateral columns predominate, and the clinical picture is then that of spastic paraplegia. This is a very definite clinical syndrome, but due to various pathological states. In other cases the posterior columns are chiefly affected, and many are of pathological rather than of clinical interest, as the changes in the cord either give rise to no symptoms, or else these are overshadowed by the more urgent ones due to the general disease in the course of which they occur. Such are the degenerations of the posterior columns found in cachectic states, in carcinoma, in glycosuria or diabetes, the slighter forms of the cord degenerations of pernicious anæmia, and also those found in some cases of chronic cystitis and enlarged prostate. In all the lower part of the cord is solely or chiefly affected and the predominant symptom is paraplegia, or paraplegic weakness with ataxy, with or without some, generally not profound, sensory affection.

Paraplegia.

Cases of paraplegia of this kind are found recorded under the names of spastic, ataxic, or senile paraplegia, combined sclerosis, or subacute combined degeneration. Unfortunately these terms are not always used in the same sense, whilst cases of one group shade by degrees into those of another, and except in the case of subacute combined degeneration convey no very clear idea of the pathological changes. For instance, under such a name as ataxic paraplegia will be found included quite distinct diseases, whilst spastic paraplegia merely indicates the predominant clinical feature irrespective of its pathological cause. An important step forward in differentiation was the separation of subacute combined degeneration, both clinically and pathologically, from amongst these various conditions by the work of Russell, Batten, and Collier.[3]

With the proviso that the above designations as given in reports of cases are not mutually exclusive and only afford a rough idea of the age incidence, I find that of 114 cases of spastic and ataxic paraplegia, combined sclerosis and subacute combined degeneration 38 per cent. occurred between 50 and 70 years of age. If spastic paraplegia is excluded for the reason that it will comprise many old-standing cases of lateral sclerosis secondary to myelitis and other causes, the proportion between these ages is higher, 49 per cent., and reaches its highest point in subacute combined degeneration.

Dr. Collier[4] in his excellent account of this disease states as to the age of onset that the extremes are between 30 and 65 years, and that the highest incidence is reached between 55 and 60. Of 11 cases under my observation, in most of which the diagnosis was confirmed post mortem, the age in 9 was between 53 and 64. There was no definite cause for the disease in any; in two cases it appeared after severe diarrhœa and vomiting, and one patient had had syphilis. As to the association with anæmia, 3 of the patients suffered from pernicious anæmia, 3 from anæmia distinctly of the secondary type, and 4 were not anæmic.

None of these varieties of combined sclerosis of the cord can be regarded as true system degenerations, understanding by this term the degeneration of fibres anatomically and physiologically connected, whose disease is not due to local changes in the cord, but to some profound change in the body generally with a specific action on certain spinal tracts. The true system degenerations appear earlier in life and are often hereditary or familial. They are represented after the age of 50 by cases of degeneration of the lateral columns which exceptionally occurs in tabes dorsalis, of amyotrophic lateral sclerosis, and by an occasional survivor of Friedreich's disease, and of hereditary spastic paraplegia.

Hæmatomyelia of spontaneous and non-traumatic origin is rare at any age. Of von Pfungen's[5] 10 cases, 4 were between 50 and 65. As this is the age of cerebral hæmorrhage it might be expected that the cord would also be liable to hæmorrhages, but this is not the case, the reason probably being that the circulation in the cord does not suffer from rapid and great alterations in pressure.

I may briefly refer to weakness in the legs or paraparesis as occasionally a symptom of chronic uræmia in elderly persons. This may be the first sign of kidney disease for which the patient seeks relief. In three cases I saw the symptoms, of gradual onset, consisted of weakness in the legs with a feeble, tottering, or uncertain gait. There was no affection of sensation, the deep reflexes were exaggerated, the superficial normal; there were constipation and difficulty of micturition. The affection lasted from three to six months before severe general symptoms of uræmia appeared.

Senile paraplegia is a name used for paraplegic weakness due to diverse pathological changes. For

[2] Allbutt and Rolleston's System of Medicine, vol. vii., p. 659.

[3] Brain, vol. xxiii., 1900, p. 39.

[4] Allbutt and Rolleston's System of Medicine, vol. vii., p. 737.

[5] Jahresbericht für Neurologie und Psychiatrie, Band x., 1906, p. 612.

the most part the sufferers are beyond the age we are considering. A variety has, however, been described by Oppenheim,[6] which he attributes to arterio-sclerosis of the cord and to perivascular sclerotic changes especially in the white matter, and forms one variety of the group of "combined scleroses." According to Purves Stewart,[7] the cases so affected can hardly be called senile. The ages of Hirsch's cases varied from 44 to 65. The symptoms are those of a slowly progressing spastic paraparesis, ultimately leading to contraction of the limbs, with increase of deep reflexes. Less usual are sensory disorders and sphincter paralysis (Oppenheim).

Sir William Gowers also described under the name of simple senile paraplegia a condition occurring especially in persons over 50 characterised by simple weakness of the legs with slowness of movements, but without wasting, sensory disorder, or alteration of reflexes, and resembling paralysis agitans without tremor.

Spastic paraparesis or even paraplegia may in later life be due to cerebral affections; for instance, small patches of softening on each side of the pons or bilateral disease of the cortical leg centres, causing degeneration of the pyramidal tracts.

Pressure Paraplegia.

Of the causes of paraplegia from compression of the cord, caries of the spine, hypertrophic cervical pachymeningitis, and internal pachymeningitis involving a great extent of the cord, and probably of syphilitic origin,[8] are very seldom met with after 50. According to Bruns, extramedullary benign, solitary, and slow-growing tumours are most frequent between 40 and 60 years. These are the tumours most favourable for operation. In 4 cases over 50 under my care 3 were in the cervical and 1 in the lumbar region; the latter and one of the former were removed, with recovery of power. The most important cause of a compression paraplegia in later life is cancer of the vertebræ; the cases are almost all over 50, and the growth nearly always secondary. The primary tumour is most frequently in the breast, but may be in the prostate, stomach, uterus, or other organ. On account of the agonising pain which often attends it, this is one of the most terrible of diseases. Occasionally a case is seen in which little pain is suffered, but this is exceptional. The typical feature of the pain is that it is brought out or increased by movement, is in abeyance during rest, and is localised. Sometimes early, but more often later, in the course of the disease pains from pressure on posterior nerve roots may occur; these are not so much affected by movement, are lancinating, and pass down the course of the nerve.

The diagnosis in the early stages is often difficult. The symptoms may be vague, and one is not justified in making such a grave diagnosis except on certain grounds. An X ray examination may clear up the diagnosis in a doubtful case, but not always. Late in the disease, when the patient is cachectic, wasted, has deformity of the spine or the characteristic shortening of the trunk due to involvement of several vertebræ, and pressure paraplegia, the diagnosis is obvious. Cases may not be diagnosed before paraplegia occurs, and the onset of paraplegia may be almost sudden from the development of a patch of softening in the cord at the site of compression. In one case of a small scirrhous tumour of the breast the primary tumour was not noticed before paraplegia occurred. The discovery of the primary tumour or history of its removal is the most valuable aid to early diagnosis of cancer of the spine. A history of a considerable interval between the discovery and the removal of the growth is important. Many years may pass between operation for the primary growth and the development of metastases in bone.

The absence of some of the more characteristic symptoms of malignant disease leads to failure of early diagnosis; thus there may be no wasting, and patients may even become fat from enforced inactivity; tenderness or pain on percussion over the spines may be absent even when the patient complains of intense pain on movement; and deformity of the spinal column may not occur until late in the illness. The early pains may be set down to rheumatism or hysteria. The latter mistake is especially apt to be made when the disease occurs in a woman known to be formerly hysterical, or when the attacks of pain are intermittent. In some cases both the pains and the difficulty of carrying out certain movements may entirely disappear for a time, and Oppenheim lays especial stress on the errors of diagnosis likely to arise when pronounced temporary improvement occurs.

A rare cause of pressure paraplegia in later life is a limited osteo-arthritis of the vertebræ. Various forms of osteo-arthritis of the spine are well known, and I refer only to those cases in which a paraplegia, generally painful, is caused by an osteo-arthritic lesion limited to a few vertebræ. Such a case is described by Bailey and Casamajor[9] in which the existence of an extramedullary tumour seemed probable as the cause of the paraplegia, but at the operation the laminæ and spinous processes of the twelfth dorsal were found thickened, abnormally soft, and greyish in colour, and were removed. Pathological investigation showed chronic osteochondritis with new bone formation. The patient completely recovered. The authors emphasise the value of an X ray examination in such cases.

In a man of 65 whom I saw there was paraplegia of subacute onset apparently due to a transverse myelitis at the level of the eleventh dorsal roots. At operation the eighth, ninth, and tenth dorsal laminæ had undergone some form of sclerosing osteitis with great thickening, that of the ninth being fully one inch thick.

Tabes Dorsalis.

Tabes dorsalis, the most common disease of the spinal cord, fairly maintains its frequency in the sixth decade of life. Of 700 cases the proportion living over 50 was 24 per cent. Byrom Bramwell's[10] statistics give the age of onset in 263 cases; 9·6 per cent. occurred in patients over 50 and 1·9 per cent. in those over 60 years. Cases in which the onset occurs after 45 as a rule run a more favourable course. The longer the interval after infection before symptoms of tabes appear the less acute the course of the disease. It is well known that where optic atrophy is an early sign the disease is often mild and non-progressive. It is not necessary to give instances of the long duration of the milder forms of this disease. In some cases of tabes the symptoms are slight and do not advance; in another group the disease

[6] Loc. cit., vol. i., p. 331.
[7] Allbu't and Rolleston's System of Medicine, vol. vii., p. 806.
[8] Vide Brain, vol. xxiv., 1901, p. 453.
[9] Journal of Nervous and Mental Diseases, vol. xxxviii., 1911, p. 593.
[10] Brit. Med. Jour., i., 1908, p. 669.

is more pronounced, but the average duration before the patient is incapacitated is 15 years (Malaise).

Tabes shows a decided falling off after 50 as compared with 30–50, and a very marked fall after 60. The cases over 50 comprise: (1) stationary and latent cases; (2) others only slowly progressive; of these the inset in 30 per cent. took place between 40 and 50 years of age; (3) cases which begin after 50. In some of these there was a late syphilitic infection after 40 years of age, but in others the interval after infection was 20 to 30 years or even longer.

Arthropathies seem to be present in a larger proportion of cases than in younger patients; in several cases the character of the work as involving the especial use of certain joints seemed to determine the site of the arthropathy. Aortic disease is more frequent in elderly tabetics, and other complications are hemiplegia or recurrent paralysis, either monoplegic or hemiplegic, due to syphilitic disease of the cerebral arteries. In some of these patients the signs of tabes may be first discovered when the patient seeks advice for one of these complications. Cases following an acute course with severe ataxy are rarely met with after 50. The prognosis as to life is not bad, except in aortic or vascular disease or cystitis following old-standing difficulties of micturition. Cystitis is sometimes due to a B. coli infection of the urinary tract. In its onset and recurrent phases this infection in old cases of tabes may be very severe and directly threaten life.

The Muscular Atrophies.

The myopathic forms of muscular atrophy do not affect the period of life under consideration, but from the long course run by some cases, sometimes as long as 30 or 40 years, there will be a few survivals. Of 100 cases of various forms of muscular dystrophy 3 or 3·5 per cent. were over 50 years of age. On the other hand, the myelopathic forms, progressive muscular atrophy, bulbar paralysis, and amyotrophic lateral sclerosis, are relatively frequent after 50. Although the essential pathological process in these diseases is probably identical, there are sufficient differences clinically between progressive muscular atrophy and amyotrophic lateral sclerosis to justify the retention of the names, although it must be admitted that cases in which the disease is absolutely confined to the lower motor neurons are seldom seen.

The clinical difference between the three forms also appears in the age incidence. The order of frequency of these diseases after 50 is: (1) bulbar paralysis, in which the large majority of cases occurs after this age; (2) progressive muscular atrophy; and (3) amyotrophic lateral sclerosis. In 60 cases of progressive muscular atrophy 30 per cent. occurred between 50 and 70, and of 63 cases of amyotrophic lateral sclerosis 12 per cent. were found between these ages.

With regard to the etiology in myelopathic muscular atrophy, there is good evidence that syphilis may be the cause in some cases. Head and Fearnsides[11] consider that muscular atrophy of syphilitic origin can be divided into two groups —(1) examples of meningo-vascular syphilis, and (2) cases analogous to tabes dorsalis and primary optic atrophy. For the most part the cases in both these groups will fall before the age of 50, though it would be expected that those in the second should be the later of the two. In several cases of progressive muscular atrophy in elderly patients I noticed that the atrophy started in muscles or groups of muscles which were chiefly used in the patient's occupation, and may presumably have become exhausted. The rate of progress of the atrophy was more rapid in these cases. The disease steadily spread beyond the muscles first affected, so that there was no question of a mistake in diagnosis for a limited atrophy of muscles due to occupation. Is it possible that a muscular atrophy from occupation starting from over-fatigue of special muscles tends in an elderly person to spread widely, whilst in those younger it remains limited to the muscles involved in the particular action concerned? The occurrence of these forms of atrophy after 50 is not obviously connected with arterial disease, for this was not more pronounced in these patients than in normal persons of the same age.

Some rare cases of progressive muscular atrophy run a subacute course, and are especially met with in the elderly. Oppenheim[12] classes them apart as subacute and chronic anterior poliomyelitis. He suggests a toxic cause and says that care must be taken in diagnosis to exclude toxic polyneuritis. Other writers assign the cause to traumatism, and Oppenheim quotes the observations of Schmaus-Sacki who showed that injuries by causing disturbances of the lymphatic circulation may lead to local lymph stasis and tissue necrosis.

Of two well-marked cases of this affection, both in men in good circumstances and of previous good health, one was aged 67. Three weeks after a heavy fall weakness of the left hand and arm began and steadily increased; two months later he had very little use of the upper extremity and its muscles generally showed atrophy with fibrillary tremor. Five months after the accident the atrophy had greatly increased, both upper extremities and the neck being now involved. The disease shortly afterwards spread to the bulb, and he died quite suddenly. The other patient was aged 66. He had been overworked for some time before the onset of the disease. The distribution of the atrophy, as in the other case, was practically confined to the upper extremities. The course of the illness was four months, and he also died suddenly. Lastly, may be mentioned the very occasional occurrence of atrophy of the small muscles of the hand in connexion with a cervical rib even so late as 50 years of age.

Disseminated Sclerosis.

Disseminated sclerosis is essentially not a disease of the period of life under consideration. It generally begins much earlier, but as it may run a long course there will be a certain number of survivors after 50. Moreover, it is well known to be peculiarly liable to remissions, sometimes of very many years' duration, and the final outbreak may exceptionally be deferred to quite late in life. An extreme example of this occurrence is given by Purves Stewart.[13] The remissions may be of such duration as almost to amount to recovery from the disease; possibly such remissions may occasionally even be permanent.[14] Allowing for a source of error from the fact that in common diseases only exceptional cases are recorded, instances of the onset of this disease in patients over 50 are very

[11] Brain, vol. xxxvii., 1914, p. 110.

[12] Loc. cit., p. 220.

[13] Index of Prognosis, edited by Rendle Short, 1915, p. 153.

[14] Von Oppenheim: Deutsche Zeitschrift für Nervenheilkunde, xxxiv., 1908, p. 61.

uncommon. In 536 cases from various sources irrespective of age of onset the number over 50 years was from 4 to 5 per cent. The few cases in which the onset occurs late in life seem often to present exceptional features, and are therefore of importance from the point of view of diagnosis.

The rare form in which disseminated sclerosis runs its course with muscular atrophy and may resemble amyotrophic lateral sclerosis is considered by Schnitzler[15] to affect older patients and to run a more rapid course. He gives a case, aged 53, in which the clinical diagnosis was amyotrophic lateral sclerosis, but the necropsy showed a typical disseminated sclerosis.

There are also cases such as those reported by Bornstein[16] in two women aged 60 and 62 respectively. The clinical signs were those of a subacute transverse myelitis, and pathological examination showed areas of multiple sclerosis together with marked changes in the vessels. Their exact relation to the more regular types of disseminated sclerosis has still to be determined.

Syringomyelia.

In syringomyelia the large majority of cases occur between 20 and 45 years of age. The disease, however, is met with at all ages, and considering that it is one of the rarer nervous diseases, fairly often over 50. Out of 135 cases 23 per cent. were between 50 and 70. Hospital statistics give a rather lower percentage, about 17 per cent., than reports of special cases. On the view now generally held that syringomyelia is due to a gliosis of the cord, it is interesting to compare the age incidence with that of glioma elsewhere. Dr. H. H. Tooth[17] in 127 cases of glioma of the brain gives 11 per cent. with onset between 50 and 70. Syringomyelia may run a very long course; thus Oppenheim mentions a patient alive at 68 in whom it began at 18. Other instances are on record where the duration was 48, 40, and 36 years. Such cases form a certain proportion of those over 50. On the other hand, the onset may be after that age; this happened in 13 out of 79 cases. Sometimes the disease suddenly takes on an acute phase, or progresses afresh in later life after quiescence for long periods. Syringomyelia may almost certainly be latent and suddenly start into activity. Although there is still a difference of opinion on the point, the evidence that the cause of this activity is often an injury is strong.[18]

Fries,[19] in an inquiry into syringomyelia in senium, concludes that it does not differ from that at earlier ages. Pathologically it is characterised (1) by the replacing of gliosis tissue by connective tissue (*Bindegewebe*), which originates from the adventitia of diseased vessels, and (2) by the formation of cavities in the lateral columns of the cord not connected with the central canal and due to patches of softening. He attributes the progress of the disease in senium not only to gliosis, but also to the formation of cavities through arteriosclerosis. The first appearance of syringomyelia in later life or the sudden aggravation of symptoms may be due, at any rate in part, to secondary vascular changes in the cord and to hæmorrhages.[20] Hæmorrhage from diseased vessels into cavities formed as above described may easily occur, and has been actually found as the cause of a sudden aggravation of the disease in elderly people.

Other cases occur in which the symptoms are clinically those of syringomyelia, but own an entirely different pathology, being due to the formation of cavities in the cord as a direct result of hæmorrhage from vessels with degenerated walls. When syringomyelia originates or starts into fresh activity late in life it is generally progressive.

It may be added that the origin of destructive disease of the joints in an atypical syringomyelia is probably more frequent than is generally recognised. A remarkable case came under my notice. A woman aged 62 five and a half years previously had her left leg amputated above the knee because it was so extremely contracted that it caused great pain and the heel was forcibly pressed against the anus and hindered defæcation. Subsequently the right leg became contracted and flexed across the abdomen. When I saw her this leg had been straightened by an osteotomy on the femur and tibia. At the operation the bones were found to be remarkably brittle and atrophic. She had also slight atrophy of the small muscles of the hands, and areas of loss of sensation to pain and temperature, with retention of tactile sensibility, were found on the face, the chest, forearms, and hands.

Neuritis.

Of the various forms of multiple neuritis that due to alcoholic excess is, of course, by far the most common, and is also the one that has the most striking age incidence. In 250 cases of multiple neuritis taken from various sources only 10 per cent. occurred over the age of 50. 75 per cent. of these cases were between the ages of 30 and 50.

In 45 cases under my care 24, of whom 18 were women, were between the ages of 40 and 53 years. There seems to be a special incidence of alcoholic neuritis during the climacteric. The cause of this may be found in the nervous disturbances from which women suffer at this time. The mental depression and the feelings of nervous exhaustion or lassitude, which are such common features of the climacteric, would tend to induce the less stronger-minded to seek relief in alcohol. The nervous changes of the climacteric may possibly impair the nutrition of the lower neurons, and render them more susceptible to the poisonous action of alcohol. As to symptoms, I think that the characteristic mental symptoms of Korsakov's syndrome are more frequent and pronounced in this group than in cases at an earlier age, and also that there is—very constantly—affection of the heart muscle.

Of the less common forms of multiple neuritis the glycosuric is perhaps relatively the most frequent after 50. The etiology is often a mixed one, and may be constituted of gout, glycosuria, and alcohol. In several cases of glycosuric neuritis in persons between 50 and 60 the patients were heavy drinkers, and in them alcohol, if not the chief, was a large contributory cause. In any case of supposed glycosuric neuritis a possible alcoholic origin should be excluded.

A rare but grave form is acute or subacute toxic polyneuritis. Instances of this disease may occur at any age, though the majority fall between 20 and 45. Of 13 cases under my care, four

[15] Zeitschrift für die gesamte Neurologie und Psychiatrie, Band xii. 1912, p. 310.
[16] Rev. Neurol., 1911, p. 84.
[17] Brain, vol. xxxv., 1912–13, p. 61.
[18] Von Oppenheim: Text-book of Nervous Diseases, p. 378.
[19] Arb. aus d Neurol. Inst. a.d. Wiener Univ., Bd. xiii., 1906, p. 70.
[20] Von Vetlesen and Harbitz: Jahresbericht für Neurologie und Psychiatrie, viii., 1905, p. 631.

occurred at the ages of 72, 68, 50, and 49 respectively.[21] A widespread paralysis of acute or subacute onset due to toxic polyneuritis may follow an ascending course, and constitutes one group of the cases classed under Landry's paralysis. In the majority the presence of decided sensory changes, "glove" and "stocking" anæsthesia, pains, and muscular tenderness are distinctive of polyneuritis, but there is one form which affects the lower motor neurons almost exclusively, and leaves the sensory almost or entirely unaffected. The early diagnosis from the spinal form of ascending paralysis may then be difficult.

It remains to mention the cachectic forms of neuritis, and especially that which develops in connexion with carcinoma, for the majority of such cases will naturally fall between the ages of 50 and 70. The symptoms as a rule are of slight intensity. Towards the end of this period the senile form of multiple neuritis, which in some instances is referable to arterio-sclerosis or atheroma, appears. In this variety, according to Oppenheim, neither paralysis nor sensory symptoms are very marked; others, however, have described cases in which pains and hyperæsthesia were prominent features.

Brachial neuritis is in my experience relatively not infrequent between 50 and 65, and this also applies to anterior crural neuritis, which often seems to be started by slight traumatisms or by muscular effort.

Of 50 cases of sciatic neuritis, many very severe and of long standing, and all of them sufficiently bad to compel the patients to seek treatment in hospital or to confine them to bed, 27 cases occurred between 30 and 50, and 23 cases between 50 and 70 years of age, 16 of the latter falling between 50 and 60. Rheumatism and gout, with exposure to cold and wet, and excessive muscular exertion are the chief causes. In my experience the prognosis is not distinctly worse nor treatment less successful in patients over 50. The treatment adopted in nearly all the cases was immobilisation by means of the long splint.

(To be concluded.)

[21] Bristol Medico-Chirurgical Journal, March, 1915.

ROYAL COLLEGE OF PHYSICIANS OF LONDON.—A Comitia was held on Oct. 28th, Dr. Frederick Taylor, the President, being in the chair. Dr. Thomas Renton Elliott, who was elected as a Fellow in April last, was admitted to the Fellowship of the College. The following having passed the necessary examination, were admitted Members of the College: Charles Nelson Atlee, Hazel Hawkins, Edward Cuthbert, and Edmund Walter Neill Hobhouse. Licences to practise physic were granted to 105 candidates who had passed the required examination. It was announced that Mr. Ralph Stanley Swindell had been appointed the twenty-third Jenks scholar. On the nomination of the Council, Dr. Percy Kidd was elected Senior Censor in the place of the late Dr. David Bridge Lees. The President paid a tribute of respect to the memory of Dr. Lees, referring to the services he had rendered to the College. The following communications were received: (1) From the Secretary of the Royal College of Surgeons of England reporting proceedings of the Council of that College on July 29th and Oct. 14th respectively. (2) From the President of the British Academy inviting the College to send one or more delegates to a committee whose object is to reconstitute in the future the Library of Louvain. The President and the Harveian librarian (Dr. Norman Moore) were appointed delegates from the College. Dr. Norman Moore was re-elected a member of the Committee of Management. After some further business the President dissolved the Comitia.

EXPERIENCES IN THE OPERATIVE TREATMENT OF GUNSHOT INJURIES OF NERVES.[1]

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AND

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THE majority of the patients mentioned in this paper were in the section of the War Hospital at Croydon which the Surgeon-General of the Eastern Command has set aside for the treatment of injuries of the peripheral nerves and for stiff joints arising from wounds, and which he requested us to organise. Other patients were in military or V.A.D. hospitals in other portions of the Eastern Command, and three in H.R.H. Princess Henry of Battenberg's Hospital for Officers.

Twenty-eight cases were operated on by one of us (F. E.), of which 21 were due to bullet- and 6 to shrapnel or shell wounds. As regards the distribution of the lesions, 5 were injuries of the brachial plexus, 8 of the musculo-spiral nerve, 1 of the posterior interosseous nerve, 5 of the ulnar, 2 of the median and ulnar nerves together, and 7 of the sciatic or external and internal popliteal nerves. In 6 cases the injured nerve or nerves were completely divided. The sciatic nerve, as might be anticipated on account of its size, was divided three times; the other nerves divided were the median and ulnar together in one case, and the musculo-spiral and posterior interosseus once each. In one instance the sciatic nerve was perforated with incomplete division of the external popliteal portion. Many of the cases having been in V.A.D. hospitals before being transferred to Croydon, the period elapsing between the receipt of the wound and the operation was often considerable. This period in all but four cases was three months or over; of the remainder, the shortest period was seven weeks. In the absence of evidence of improvement, and if the electrical reactions indicate a severe injury of the nerve, we are of opinion that an operation should be performed as soon as the condition of the wound permits of its being carried out aseptically.

Excluding the 5 injuries of the brachial plexus, in 8 cases out of the remaining 23 it was thought necessary to resect the damaged portion of the nerve or to refresh the ends if they were separated. In other cases the nerve was separated from adhesions and surrounded with Cargile's membrane. The various reasons determining the procedure adopted are given below in considering the electrical reactions. The smallest nerve operated on was the posterior interosseous. This was found to have been completely severed (the ends being separated) by a bullet which had comminuted the head of the radius. The nerve was exposed by an incision on the outer side of the forearm, just below the external condyle and on a plane corresponding with the palmar surface of the head of the radius. After dividing the muscles attached to the external condyle the proximal end of the nerve was at once found. The ends were refreshed and the

[1] A paper read before the Medical Society of London on Nov. 1st, 1915.

junction surrounded by a portion of the basilic vein. As regards the 8 cases of injuries of the musculo-spiral nerve, half of them were associated with fracture of the humerus.

In those cases in which resection was performed the fibrotic tissue, or bulbous end, was removed on the proximal side until the section showed well-defined nerve bundles, and the distal end was refreshed. The ends were pierced with a round-shafted needle and united with one or, in the case of large trunks, two sutures of 20-day chromic catgut—0 or 1 size. It was always found possible to get the ends together by freeing the nerve above and below and flexing the nearest joint or adducting the upper arm. Where a portion of the nerve was thickened and appeared to be "hidebound," chiefly from thickening of the perineurium, an incision was made into the thickened tissue.

The 5 cases of injuries to the brachial plexus furnished many points of interest. One was due to a bullet smashing the centre of the clavicle. The clavicle was divided and fragments of bone were found pressing upon the anterior divisions of the fifth, sixth, and seventh cervical nerves, which were enveloped by dense scar tissue. This was removed, the nerves were surrounded with Cargile's membrane, and the clavicle wired. In another case the injury was by a bullet at the root of the neck. At the operation, two months after the injury, the trunks of the fifth, sixth, and seventh nerves were found thickened and more or less adherent. The condenser reactions of the paralysed muscles read from 1 to 4 micro-farads charged at 70 volts. The thickened nerves were separated from adhesions and surrounded with Cargile's membrane. Five months after the operation there was a good return of movement in the paralysed muscles. In the other cases the injuries were below the clavicle, and in two instances were of a most extensive character. The difficulty in dealing with these cases is increased by the fact that the axillary artery and vein are usually involved in the scar tissue and require careful separation. In one case it was found necessary to ligature the artery and vein above and below the lesion. No trouble occurred as regards the circulation of the limb, probably because the anastomotic circulation had been enlarged owing to partial occlusion of the axillary artery. A dense mass of cicatricial tissue had matted together all the cords of the brachial plexus and was adherent to the anterior aspect of the subscapularis muscle.

When confronted for the first time with this condition of things surgical interference appears hopeless, but we found that by cutting combined with teasing by blunt dissection the various strands of the cords could finally be separated out and the cicatricial tissues removed. In the case above referred to, a rounded mass of fibro-neuromatous tissue, the size of a thrush's egg, was removed from the posterior cord, and a portion of the inner cord three-eighths of an inch in length was resected and the nerve united. In another case the cords were matted together by a dense scar behind the pectoralis minor, just above the point where the internal circumflex is given off. The bullet had entered on the posterior surface of the root of the neck through the outer part of the trapezius, had passed under the clavicle, and made its exit behind the anterior axillary fold. The site of the lesion of the plexus was fixed as just below the point where the musculo-cutaneous is given off by the fact that the muscles on the front of the arm were the only ones giving normal reactions. It was found possible to separate the median nerve from the cicatrix, but half an inch of the posterior cord and three-eighths of an inch of the internal cord were excised and end-to-end union effected. Dr. P. N. Panton kindly examined the portion excised from the posterior cord; it consisted solely of dense fibrous tissue and contained no nerve fibres. In a third case the median and ulnar trunks were matted together below the lower edge of the pectoralis minor, but were separated and surrounded with Cargile's membrane.

Boldness is justifiable in operating on these severe lesions, as one knows that the limb must remain useless unless restoration of conduction in the nerves can be effected by surgical measures. There is the less hesitation in operating freely, since it has been established by the experiments of Professor Robert Kennedy[2] that the junction of the peripheral end of a divided nerve to the corresponding proximal portion of the same nerve is not necessary for the re-establishment of function. He writes: "In macacus the paralysis resulting from section of the fifth and sixth nerve may be largely restored by anastomosis of the peripheral segments of the two roots to the seventh cervical nerve, or to the spinal accessory."

Two cases of partial paralysis of the brachial plexus as a result of arterio-venous aneurysm in the axilla have been met with. At an operation in one case pressure on the median, ulnar, and musculo-spiral nerves in the lower part of the axilla was found. The other case is an example of an arterio-venous aneurysm involving the lower part of the axillary artery with paralysis of the musculo-spiral nerve. After keeping the patient under observation, it has been found that the aneurysm is increasing and the condenser shows that the paralysis is not improving in spite of treatment. An operation will therefore be performed.

All the cases except one have been tested electrically by one of us (R. S. W.). In practically all instances the paralysed muscles did not react to faradisation. We found the Lewis Jones condenser of great assistance, as it furnished a numerical equivalent indicating the degree of interruption to conduction through the nerve and the condition of the muscle. For example, in six cases in which there was evidence of complete division of a nerve, in one instance there was no response with the condenser, while in four the numbers ranged from 2 to 4 m.f. charged at 70 to 100 volts.[3] In these cases operation was performed three to five months after the infliction of the wound. The period elapsing after the infliction of the wound must be taken into consideration, for in the remaining case in which operation was performed for complete division of the internal popliteal nerve seven weeks after the wound, the muscles responded to a 1 m.f. capacity at 70 volts. There could be no doubt as to the nature of the lesion, since the ends of the nerve were widely separated. This patient had received massage and electrical treatment from an early date, and the consequent state of nutrition of his muscles probably had an effect as regards the electrical reactions. As showing the effect of time on the reactions obtained by the condenser, it may be noted that in the case of divi-

[2] Proceedings of the Royal Society, Series B, vol. lxxxix., No. B. 6. 10.

[3] Normal muscles give with a condenser a reading of 0·025 to 0·075 m.f. capacity, charged at 70 volts. In a moderately severe lesion of a nerve the muscle gives 0·75 to 1 m.f. charged at 70 volts, and a severe lesion 1 to 4 m.f. charged at 70 to 100 volts.

of the posterior interosseus nerve operated on five months after the injury, the muscles at the back of the forearm, except the extensor carpi radialis longior, gave no response to testing with the condenser.

The chief point in the operative treatment of these nerve lesions is to determine whether simply to separate the injured nerve from the surrounding tissues or to resect it, and this is of greater importance owing to the fact that anatomical division is comparatively rare. A definite indication is usually afforded by inspection. There may be evidence of complete division with union by a band of fibrous tissue, and in this case an enlargement of the proximal end will be present. Or the site of division, which may be partial or complete, is indicated only by a well-defined bulbous enlargement. In less severe injuries there is often a fusiform thickening of some extent involving the nerve trunk. In other cases, especially in injuries to the musculo-spiral nerve associated with fractures of the humerus, the nerve may be embedded in callus or stretched round a spicule of bone. The musculo-spiral nerve may be generally thickened and enlarged for some length; in one case of fracture of the humerus it was as thick as the end of a little finger, and the prognosis appeared bad. The condenser required for the extensors of the wrist and digits was of 2 m.f. capacity at 70 volts. Nevertheless, after freeing the nerve, voluntary movement returned rapidly, and in two and a half months there was almost complete restoration of function. Not infrequently the nerve is evidently constricted by cicatricial tissue surrounding it, or by the pressure of a dense cicatrix of the integuments.

Where doubt exists as to the advisability of resection, an indication of the amount of damage may be sometimes furnished by blunt dissection of the nerve bundles from above into the cicatrix, to ascertain if they are continuous across it.

The condenser also furnishes important indications of the site and severity of the lesion. In a case of wound of the thigh at its middle third by a portion of shell the sciatic nerve had been perforated. The condenser required was of 4 m.f. at 120 volts for the muscles on the front of the leg, 1 m.f. at 70 volts for the peronei, and 0·25 for the calf, showing that the damage was to a portion of the external popliteal nerve. At the operation the internal popliteal nerve was separated from the external nerve by blunt dissection, and a dense nodule or neuroma was found involving the inner half of the external popliteal. This was excised without interfering with the outer strands, and the gap was united with catgut.

Further, the condenser gives reliable and easily recognised indications as to when cases of nerve lesions are improving under treatment. The two following cases may be quoted. An officer received a bullet wound at close range which carried away the internal condyle and paralysed his ulnar nerve. Very definite improvement occurred. Three weeks after the injury the muscles supplied by the ulnar nerve required a condenser of 2 m.f. capacity, the charging voltage being 75. Nine months later the reactions were precisely the same, and the improvement as regards sensation and voluntary power had remained stationary for some time. Operation was therefore decided on. The nerve was constricted, and just above the injured part was a small bulbous enlargement. Seeing that there had been considerable restoration of function the nerve was freed and surrounded with Cargile's membrane. Treatment by massage and electricity was continued. At the end of two months the condenser test was exactly the same as before the operation. The patient has therefore been advised to submit to resection of the injured portion of the nerve.

To give another example. A patient was admitted to the Croydon War Hospital with a shrapnel wound behind and above the head of the fibula and paralysis of the muscles of the front and back of the leg. On August 25th the condenser required for the peronei muscles was 0·25 m.f. capacity at 70 volts. After continuous treatment the condenser capacity for the peronei, seven weeks later, was 4 m.f. at 80 volts. Operation showed that the external popliteal nerve was definitely thinned at a point corresponding to pressure by a very indurated cicatrix of the integument, and which was proximal to the original injury to the nerve.

The disappointing feature of the treatment of nerve injuries is the long period required for the completion of the reparative processes, and so far we can give very little information as regards the results of our work, most of the cases having been operated on after the beginning of August.

THE GENERAL SURGERY OF GUNSHOT WOUNDS OF NERVES.[1]

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THE very large experience now being acquired in the surgery of the peripheral nerves is not yet old enough to justify any judgment upon its final results. In dealing with the subject to-day, therefore, we cannot expect to arrive at any number of final conclusions, but must rather devote ourselves to rendering clear what body of principles we already possess, and in the light of our present knowledge to defining how they should be applied to the abundant material with which we have to deal. It will be only after the lapse of a considerable time that we can be in a position definitely to pronounce upon the success of these methods. Such final pronouncement will, however, gain in clearness and completeness if we can by preliminary discussion agree upon the general lines of technique our treatment should follow.

The problem of the restoration to the normal of an injured nerve presents certain peculiarities which distinguish it from all other similar tasks of plastic surgery. 1. The interruption of a nerve leaves a permanent defect in the physiological equipment of the body which cannot be overcome or compensated for by any other mechanism. There is no functional reserve to fall back upon like the collateral circulation of vessels or the compensatory hypertrophy of muscles. 2. The restoration of a nerve to its normal anatomical continuity, although an essential preliminary to recovery, is by no means a guarantee of it. If the normal continuity of a bone, a tendon, or even, with certain reservations, a blood-vessel be restored function necessarily follows. These are all tissues indigenous to the part and, as it were, made on the spot. A nerve is an alien tissue which invaded the part in the first instance, and if it is divided must be induced to invade the part again under

[1] A paper read before the Medical Society of London on Oct 25th, 1915.

circumstances doubtless very much less favourable. 3. An incomplete lesion or incomplete recovery of a nerve may be more disabling than a total loss of function. A completely divided nerve may be totally inert, and the consequent loss of sensibility may scarcely be perceived by the subject: a partially divided or partially recovered nerve may be the cause of such spontaneous pain and such peripheral hypersensitiveness as to make the patient's life scarcely tolerable. These peculiarities, which have their roots in the very nature of the nervous system, render the task of the surgeon exceptionally difficult; they make it urgent, they make it precarious, and they expose him to some risk of increasing rather than diminishing the sufferings of his patient.

Clinical Classification of Injuries.

It is no part of my purpose here to enter into the details of diagnosis, but it is essential to define in a broad way the various types of case which the surgeon is apt to meet with as a result of gunshot wounds. It seems to me that this is one of the aspects of the subject upon which a general discussion, combining, as it must do, a very great body of experience, might throw valuable light. We need a grouping of the cases which would enable us to recognise after a rapid examination the general type to which a given lesion belongs, and to form some general idea of the kind of treatment we should advise and the kind of prognosis we can give. Such a classification used without undue formalism and rigidity is one of the ways in which the combined experience of a large body of surgeons can be made available for the uses of the individual.

Of the material with which I personally have had to deal the following is a rough, tentative, and purely clinical classification which I put forward merely as a basis for discussion. 1. Intradural nerve injuries—almost entirely lesions of the cauda equina. 2. Peripheral nerve injuries. (*a*) Typical complete lesions of one or more nerve-trunks; (*b*) mixed lesions with complete division of some and incomplete division of other closely adjacent trunks—chiefly seen in the brachial and sacral plexuses, but especially the former; (*c*) incomplete lesions without pain, usually due to combined bruising, laceration, scarring, and pressure; (*d*) incomplete lesions with pain; (*e*) pure pressure lesions, as from a prominence of bone or a foreign body.

The defects of such a classification from the academic point of view are obvious enough, and I shall attempt no further apology for them. One omission must, however, be noticed. I have failed to separate a class of painful complete lesions. They are curiously uncommon—a fact for which a theoretical explanation may perhaps be advanced—and to deal with them would involve considering the not wholly relevant matter of amputation "neuromata" and their treatment. Some brief comment may now be made on the clinical features of the types I have enumerated.

(*a*) *Typical complete lesions.*—There is usually no difficulty in distinguishing these. The diagnosis is entirely a matter of anatomy and an exact knowledge of muscular function. I may, perhaps, be allowed to digress for a moment to say how very important the last branch of knowledge is and how any considerable experience of nerve injuries exposes the conventional nature and the meagre scope of the teaching we have received, and I am afraid sometimes given, upon the action of muscles.

There are three essential points in the diagnosis. The situation of the injury is consistent with a lesion of the nerve, the symptoms involve the whole distribution of the nerve and are absolutely stationary in spite of adequate treatment.

It is necessary to define at once what is meant by adequate treatment. Such a definition must include the means to be used and a time-limit for their employment. There are three means of treatment—massage, electricity, and muscular relaxation, and by far the most important of them is the last. It is impossible to exaggerate the importance of relaxation of the paralysed muscles in the treatment of nerve injuries both before and after operation. I have recently seen a man with a musculospiral paralysis who was for 11 months a prisoner and had been treated industriously with massage and electricity during that time. His wrist-drop, which was complete on his return, began to show improvement after a few weeks on a relaxation splint.

It is necessary to fix an arbitrary time-limit during which this treatment must be maintained. In a general way one is in the habit of regarding a period of about three months from the time of the wound as that which should elapse before operation is advised. The surgical reasons for a considerable delay are that the operations will be easier—and they are usually difficult enough—and it will be possible to make a more certain decision in a doubtful case as to the necessity for resection if time enough has elapsed for the formation of a definite bulbous end on the central side of the section. There is no evidence, as far as I am aware, that a delay of a month or two makes any difference to the final result. In any case several weeks should elapse after the complete healing of the gunshot wound before operation is undertaken, in order to minimise the risk of a recurrence of suppuration.

(*b*) *Mixed lesions* are chiefly seen in the brachial plexus. A common picture is a complete paralysis of the plexus following on the injury—usually by a rifle bullet—then a gradual improvement which ultimately comes to a standstill, leaving an irreducible residue of symptoms. The resulting paralysis, of course, differs according to the part of the plexus involved longitudinally and laterally. Curious mixtures of paralyses are often seen. It is of the utmost importance that proper relaxation treatment should be carried out before operation is decided upon, otherwise the operator may find his difficult task made much harder by perplexity in deciding what should be resected and what left.

(*c*) *Incomplete lesions without pain.*—In these cases we have a paralysis and defect of sensation which, under proper treatment, have improved but left a persistent residue. In these cases the judgment and experience of a skilled neurologist are often necessary before it can be decided whether an operation should be advised or not. Generally speaking, if there has been a definite arrest of improvement leaving a considerable residue, and it is certain that this residue is not what is called functional, operation is necessary.

(*d*) *Incomplete lesions with pain.*—These are most important and often most distressing cases. There is an injury of a nerve trunk, and in the area of distribution severe persistent pain arises either from the time of the injury or some weeks later. The motor loss of function is often profound, but the sensory loss is incomplete and accompanied by intense hypersensitiveness in the affected area,

often with slight trophic changes in the skin. The hypersensitiveness is never a true hyperæsthesia; in fact, there is always an actual raising of the stimulus threshold. Light touches are often less tolerable than firm pressure, and a patient who shrinks with horror from a light stroking contact may tolerate with composure the part being firmly grasped.

In some cases the symptoms subside within a few weeks if the patient is kept at rest and the limb well protected. If such treatment fails there should be no delay in advising operation. There is very rarely any doubt as to the organic origin of the symptoms; the pain is of a particularly intolerable kind and is apt to undermine the mental stability of the patient in a remarkable way. If it is neglected it may ultimately become quite inveterate and fail to yield even to an extensive posterior root section. The nerve is found to be involved in a dense scar which is often adherent to the bone.

(*e*) *Pure pressure lesions.*—This is a type of case which is apt not to present itself as a nerve lesion at all. As the result of comminution or distortion of the bone or of the presence of a piece of some projectile, the nerve—perhaps only during extreme movements—is stretched over some abnormal and resistant prominence. The actual symptoms are perhaps slight while the patient is in hospital and are made up chiefly of an occasional twinge, possibly along the course of the nerve, during movement or under accidental pressure. It is always to be feared that the resumption of active life will lead to persistent irritative symptoms, and an operation for the removal of the cause of pressure should always, if feasible, be undertaken.

The Principles of Operative Treatment.

Such are the main types in which injuries of the nerves may be expected to come before the surgeon. We must now consider what can be effected by operative means. The surgery of the peripheral nerves brings before us an aspect of the physiology of the nervous system which has not been given much attention.

The peripheral nerves contain a tissue which has reached the body outside the cerebro-spinal theca by a process of invasion; this tissue is in its very essence capable of irritating the non-nervous tissues and being irritated by them. This irritability is, of course, specialised for the reception and emission of certain stimuli, but there is reason to suppose from its behaviour in the body that nervous tissue has by no means lost the generalised irritability that it primitively possessed.

It therefore follows that an essential accompaniment of nervous tissue everywhere outside the cerebro-spinal axis will be mechanisms for insulating it from contact with the non-nervous tissues except at those points where its stimulus action is necessary. This insulating substance seems to be the neurilemma sheath which accompanies the nerve fibres to their terminations. Sensory nerves have terminal end organs, of which an important function, as suggested by their structure, is the insulation of the fibril from actual contact with the tissues. Fibrils concerned with sensations of pain are alone supposed to terminate by free arborisations, and there is good theoretical reason for believing this to be so.

The central nervous system, on the other hand, is insulated as a whole by a series of membranes, of which the outermost is extraordinarily dense and impervious, and by a special kind of lymph, the cerebro-spinal fluid, which is remarkably isolated from the other fluids of the body. The isolation of the central nervous system from the rest of the body is a fact which has been more and more insisted on by pathologists of recent years. One of the most striking facts about the surgery of the nervous system is that, however freely the dura is opened it always forms again with great rapidity, so that after the most extensive decompression operations the brain will be found separated from the non-nervous tissues by a dense membrane having all the characters of the normal dura. The same applies to the conditions found after laminectomy, where if there has been a leakage of cerebro-spinal fluid a cyst continuous with the dura and identical in appearance will be found. This intolerance of the tissues for cerebro-spinal fluid explains the failure of attempts to treat hydrocephalus by subcutaneous drainage.

It is not necessary to insist further here on the abundant evidences of the insurmountable incompatibility which exists between nervous tissues and all others. It must be accepted as a fundamental fact in considering the pathology of nerve injuries.

There can be little doubt that there has been a tendency to take too simplified a view of what happens when a nerve is divided and subsequently sutured. The nerve is divided and is supposed to lie there placidly awaiting the beneficent interference of the surgeon; it is sutured and its fibres grow down again—or they do not. Defects in restoration of function have found no place in the theory of regeneration, and have been rather apt to be ignored or to be ascribed to simple faults of technique or delay in surgical treatment.

As a matter of fact, section of a nerve results in complex reactions between the central end and the surrounding tissues. There is a truly remarkable outgrowth of very numerous fine axis-cylinders and a truly remarkable response of the tissues in the formation of a capsule of extraordinarily dense fibrous tissue round them—the so-called bulbous end. The picture presented suggests that the nerve fibrils were actively trying to invade the tissues and the tissues were trying to ward them off by a process of encapsulation. Within the end bulb the nerve fibres twist and turn in the most complex way, but everywhere are met by impenetrably dense fibrous tissue. It seems clear that this capsule is a tissue response to the contact of the nervous substance, and it is at any rate probable that the active outgrowth of the nerve fibrils is a response to the contact of the non-nervous tissues. A strong piece of evidence in favour of this view is the fact that regeneration of nerve fibres does not occur within the dura mater. There the stimulus of contact with non-nervous tissues is absent, and a section is not followed by an active outgrowth of fine axis-cylinders. That the insulation afforded by the meninges is effectual is shown by the fact that within them the special insulating sheath or neurilemma is absent from the nerves or imperfectly developed.

Two conclusions of practical importance follow from these considerations. 1. Regeneration is dependent upon, and resisted by, the reactions between the exposed nerve substance of a divided nerve and the surrounding tissues. Where such reactions cannot occur there is *no* regeneration as in the spinal cord; where such reactions can occur regeneration is apt to be resisted by fibrosis and consequently at times to be greatly delayed or incomplete. 2. Regeneration involving a reaction

between the nerve and the tissues is apt to lead to an irritation of the former, which makes it hypersensitive and produces the well-known phenomena of hypersensitiveness in recovering areas. No doubt individual variations occur in the severity of the reactions which follow the bringing of the cut surface of a nerve in contact with the tissues. In some persons nerves may be divided and equilibrium between the outgrowing fibres and the encapsuling bulbous end be established satisfactorily and painlessly. In others equilibrium is never regained, the bulbous nerve ends become excessively painful and the pain may spread until it cannot be relieved even by the division of posterior roots. I have recently seen a case in which a painful neuralgia of a stump persisted unrelieved for 50 years after an amputation. Fortunately, however, in the majority of cases the irritating effect of the encapsuling fibrous tissue upon the nerve tends gradually to subside.

Practical Considerations.

Turning now to the application of these principles to the surgery of nerve injuries, certain general conclusions can at once be made.

Cauda equina lesions.—It is obvious that any attempt to secure regeneration of divided nerves of the cauda equina by suture must fail if the principles I have laid down are correct. This opinion seems to be fully confirmed by experience.[2] On the other hand, it must be remembered that it can never be determined by clinical examination how far the symptoms of such an injury are due to pressure and how far to actual nerve division. The knowledge that regeneration cannot occur is therefore an argument for early operation in every case when there is the least suspicion of an element of pressure. Delay in the case of a peripheral nerve is not so serious because there regeneration is possible if the pressure effect is so prolonged as to destroy continuity. In the cauda equina, if the pressure has gone on to the destruction of the nerve, recovery is impossible. Hence when there is any reason to suspect an element of pressure in the production of the symptoms as by a bullet in or near the spine, or a fragment of bone, the only reason for delay will be a fear of sepsis. In general it would be safest to wait until the primary wound had healed.

A further factor in these cases where there is a foreign body in or near the spine is the possibility of local suppuration round it. I recently had to deal with such a case. The patient had been wounded at the Dardanelles some ten weeks earlier. The skiagram showed a rifle bullet in or near the spinal canal at the level of the first lumbar vertebra, and there were well-marked symptoms of a caudal lesion with the usual root distribution. The symptoms had been slightly but steadily improving. At the operation the bullet lay in the midst of the cauda equina surrounded by an abscess of about the size of a nutmeg. In spite of the fact that during the extraction of the bullet cerebrospinal fluid escaped the wound healed quite rapidly, and there has already been a considerable improvement in the symptoms.

The Technique of Peripheral Operations.

Supposing the primary wound to be soundly healed, the diagnosis to have been made with all reasonable precision and confirmed by an adequate period of treatment by massage, electricity, and relaxation, the operator will approach the case with a fairly clear idea of what he will have to do. Time will be saved by making an incision free enough at once to give access to the nerve above and below the injured part.

When the nerve has been exposed and dissected out of the scar the extent to which its continuity is interrupted will have to be determined. In certain cases it will be obvious at once, from the disposition of the nerve, that it has been completely divided. In doubtful cases there will be three points to be taken into consideration: (1) The presence or absence of a bulbous end above the scar; (2) the presence or absence of a distinct longitudinal fibrillation of the scar; and (3) the effect of strong faradic stimulation above the scar. In my own experience—operating at a period of about three months after the injury—the presence or absence of a bulbous end is by far the most important distinguishing character. The bulbous end should be freely excised.

I will not spend time in discussing the method of closing large defects in nerve trunks. When strong flexion of the limb is inadequate there are, in my opinion, only two alternatives—implanting both ends of the injured nerve into an adjacent trunk, or filling the gap with one or more lengths of some large cutaneous nerve like the internal saphenous. A great deal of care should be given to securing the exactest possible coaptation of the sutured ends by the finest catgut. When the suture is complete the junction should be wrapped in a layer of subcutaneous fat which may well be a quarter of an inch thick and should extend, if possible, for two inches on each side of the junction. The tube of fat should be secured to the nerve sheath at each end and be securely stitched to make the insulation of the join as complete as possible. Fat is chosen as being an inert tissue which bears transplantation well, affords a mechanical protection of the nerve, and is perhaps comparatively non-irritating to the nerve. The most rigid asepsis is essential because any infection tends to increase the fibrosis about the junction, a factor which, as we have seen, is so hostile to regeneration. It is probable that degrees of sepsis far short of the gross manifestation of pus are capable of producing this harmful effect.

Incomplete lesions.—When it is decided that resection is not necessary the nerve must be freed from the scar and carefully wrapped in fat as described. At the same time any bony prominence that tends to press on it must be removed, and any muscles, tendons, or other scarred structure that would resist free movement must be divided if such is permissible.

As far as experience seems to show us at present the most important points in the technique of nerve resection are free excision, exact coaptation, careful insulation, and perfect asepsis. Muscular relaxation before and after the operation is, perhaps, equally important.

Harley-street, W.

[2] It is probable that the impossibility of regeneration in the cauda equina is here asserted somewhat too absolutely. We know from the occurrence of neuro-fibromata upon the intra-thecal course of nerves that some kind of neuro-somatic reaction is possible there. That it is very different in character from that which occurs outside the theca is shown by the highly cellular and vascular structure which these intra-thecal neuromata seem usually to possess.

BRIGHTON HOME TRAINING SCHOOL.—The education committee of the Brighton corporation, being instructed to save the sum of £2000 on the year's estimates, has decided to close the home training school, though in passing a resolution to this effect the committee decided to reconsider the question at the end of the war. An excellent work has been done by the school.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

CAVERNOUS ANGEIOMA IN THE WALL OF THE LEFT AURICLE.

BY R. F. MANIFOLD, M.B., B.CH. DUB.,
SENIOR ASSISTANT MEDICAL OFFICER, DENBIGH ASYLUM, NORTH WALES.

THE patient, a woman aged 54 years, and unmarried, was admitted to the Denbigh Asylum suffering from acute mania. Owing to her excitement and restlessness a detailed physical examination could not be carried out, but she was apparently in normal health for her age. Her previous history was unobtainable. Half an hour after admission she had an epileptiform seizure, from which she soon recovered. She remained in a very excited condition for two months, during which time she had no further seizures and her health remained good. Early one morning she was found in a state of collapse by the nurse and she died almost immediately.

Cavernous angeioma in wall of left auricle. T shows tumour.

At the post-mortem examination all the organs were found to be healthy with the exception of the heart. On the wall of the left auricle and arising from the site of the fœtal foramen ovale was a tumour of the size of a small walnut, slightly pedunculated and so placed that on holding the heart in a vertical position it could be made to drop into the mitral orifice and obstruct it. Apparently this is what had occurred and produced sudden death, as there was no other evident cause.

Microscopic examination showed that the tumour consisted of a loose fibrous stroma containing many blood-vessels and large cavernous spaces containing blood, and in some places blood-vessels almost obliterated, with a few endothelial cells, degenerated material, and elastic laminæ. It was evidently a cavernous angeioma. Its connexion with the foramen ovale points to a "developmental" origin, and its occurrence in such a situation appears to be rare enough to record, as Bland-Sutton mentions only one instance of cavernous angeioma occurring in the wall of the auricle, and that was on the right side.

Dr. J. L. Stephenson, of Whittingham Asylum, very kindly undertook the microscopical examination and is also responsible for the photograph of the tumour *in situ*.

Denbigh.

A CASE OF OPTIC NEURITIS FOLLOWING ON "GASSING."

BY G. FINCH, M.R.C.S., L.R.C.P. LOND., D.P.H. OXON.,
CAPTAIN, ROYAL ARMY MEDICAL CORPS (T.).

Private ——, of the 3rd Battalion Royal Fusiliers, was subjected to gas from a German trench at Ypres at 4. P.M. on May 3rd, 1915. According to the patient's account, the gas was invisible, and was first noticed by the irritation it caused to the throat, nose, and eyes. Consciousness was not lost, nor did any extreme weakness or breathlessness result. That night the patient remained in a "dug-out," and though the eyes smarted the pain was not severe, nor was the sight much affected. The following day he began to suffer severely with headache and on the same day was taken prisoner. In the course of three or four days his sight began to fail, and this became progressively worse for about two months. About 14 days after being taken prisoner the patient was treated with drops in the eyes, but was not admitted to hospital, and did not know of any similar cases to his among the other prisoners.

On admission to the 3rd London General Hospital, Wandsworth, in August last the patient was in good general health and there was no evidence pointing to any constitutional cause for his eye condition. Gonorrhœa and syphilis were denied, and a Wassermann reaction was negative. Some years previously he had had typhoid fever and been in bed about six weeks, otherwise he had had no illness and was a strong robust man with a fresh complexion. Previous to enlistment in September, 1914, he had been a stoker in a lead-smelting works in St. Helens, but had never come in contact with red or white lead, nor had he ever suffered from symptoms pointing to lead poisoning. The urine showed no albumin or casts. Right eye: Vision, perception of light only. Fundus: The disc showed obvious signs of secondary atrophy, the summit of the papilla + 7·0 D., and the retina + 5·0 D. The physiological cup was filled up. Organising striæ radiated from the disc in all directions, and the swelling of the papilla extended one disc diameter beyond the margin of the disc. Left eye: Vision = 1/60th; with + 6·0 D. sphere = 6/36. The fundus showed similar changes to the right, though rather less marked, the summit of the papilla + 7·0 D. and the retina + 5·0 D. A rough test of field showed it to be not reduced.

I am indebted for permission to publish this case to Captain R. R. Cruise, R.A.M.C. (T.), under whose care the patient was. Captain Cruise suggests that the condition may be an infective neuritis, possibly associated with an ethmoiditis, due to the gas.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF NEUROLOGY.

Presidential Address.

AT the opening meeting of the session of this section on Oct. 28th Dr. JAMES TAYLOR delivered his presidential address, taking as his subject the Ophthalmological Observations of Hughlings Jackson, and their Bearing on Nervous and Other Diseases. Dr. Taylor said he did not think it could be easy for anyone who was not brought intimately into contact with him to understand the reverent affection always entertained by those who enjoyed that good fortune for the great personality of Hughlings Jackson. His object in this address was to stimulate interest in Dr. Jackson's writings, with their wealth of clinical observation, accurate scientific method, and broad philosophical grasp. One of his earliest and most lasting interests was in ophthalmological and ocular conditions, and most of his early writings dealt with these, especially in reference to the symptomatology of intracranial tumours. Alterations in speech produced by disease also claimed much of his attention, and other departments of his activities included hemiplegia, chorea, and the syphilitic diseases of the nervous system; also epilepsy, vertigo, and associated ear states. Jackson's series of treatises on the evolution and dissolution of the nervous system, though severely scientific, were yet intensely practical. In nervous diseases he was never tired of insisting on the necessity of routine ophthalmological examination. In his paper, contributed in 1863, dealing with defects of sight in brain disease, he pointed out the occurrence of two kinds of atrophy: one in which the nerve gradually whitened, the other in which whitening followed certain acute changes, the latter being known as "amaurosis." Emphasis was also laid on ophthalmoscopic examination in hemiplegia, and especially in seeking for evidence of Bright's disease, and in cases brought in comatose; and all the time he insisted on the need for preserving a philosophical balance of mind so as to ensure that everything was seen in its true perspective. He set out at length his reasons for urging that ophthalmologists and alienists should do much work in common, for the evolution of movement and sensation could be best studied at an eye hospital. Amaurosis might be studied with too much intensity and at the same time with too little breadth. To the ophthalmologist it was a disease of such great importance, calling for particular action on his part, that he might underrate its significance as a symptom in general conditions of the system. It was when it occurred with other phenomena that the discovery of what it meant was most likely to be made. The ophthalmic surgeon could scarcely confine his thoughts to a single sense apparatus, however much his practice might be limited to the defects of that one. To the physician defect of smell, though it might be less important, was of equal significance with defect of sight. Hemiplegia with its allies was the extra-ophthalmological symptom which chiefly deserved the consideration of ophthalmologists because of the frequent occurrence of ocular or visual anomalies in association with it. Jackson regarded insanity as the very highest medical study. As early as 1863 Hughlings Jackson wrote on the existence of optic neuritis without obvious defect of sight; but its acceptance in anything like a general way was only the result of constant insistence. He expressed the opinion that disease of the cerebellum, *per se*, does not produce blindness, neither does disease of the cerebrum, of itself, do so; but that tumour in either region did so by setting up optic neuritis, the result of local encephalitis. Lecturing on optic neuritis in 1871 Jackson said that the intracranial disease most often associated with double optic neuritis is a coarse one, a lump of something, an adventitious product; and, further, that double optic neuritis did not point to any particular kind of coarse disease, only to some coarse disease. The condition scarcely ever occurred in chronic and general convulsive attacks, a condition of hemiplegia from local softening, &c.; and he pointed out that optic neuritis was not a localising sign. He begged his readers to remember the three following points: (1) That optic neuritis frequently exists when the patient can read the smallest type; (2) that in cases of adventitious products in the cranium the ophthalmoscopic appearances vary greatly, also at different stages in the same case; and (3) that the use of the ophthalmoscope should never be omitted when a patient has severe and continued headache. Hughlings Jackson's "Physician's Notes on Ophthalmology" were a storehouse of interesting record, and in them he insisted that intracranial tumour might be present without optic neuritis, that optic neuritis might be observed and yet no tumour be found, and, as already mentioned, that optic neuritis did not necessarily result in blindness, though there was usually great danger of it leading to impairment of sight. In his annual oration before the Medical Society of London in 1877 he recognised the importance of the effects which refraction errors might produce. Thus, hypermetropia might cause symptoms simulating those of brain disease, such as headache and squinting; and observation of hypermetropic discs was of the utmost importance because of the close resemblance they bore to the inflamed disc associated with tumour. In this address Dr. Jackson proceeded to show the inseparable connexion of motor activity with sensory activity in ideation. They showed that whilst the colour—the secondary or dynamical quality of an object—was a sensory affair, its size and shape—its primary or statical quality—was a motor affair. In the light of this, ophthalmological facts became of inestimable value, showing that the estimation of the extension of objects was due to motor activity, and that activity of motor centres would suffice. He (Dr. Jackson) pointed out that optic atrophy was important in reference to examination with the ophthalmoscope; it often occurred in tabes dorsalis and in general paralysis of the insane. It might occur with or without pupil changes, with or without pain, with or without ataxy; and it was not a necessary sign in tabes dorsalis. Retinal embolism, revealed by the ophthalmoscope, might be associated with cerebral embolism. The same instrument might render visible other tissue change in the fundus, such as that resulting from tubercle, syphilis, or Bright's disease, though it was to be noted that the ophthalmoscopic appearances of Bright's disease were often closely simulated by those occurring in intracranial tumour. At a very interesting discussion which Dr. Jackson participated in, reported in the first volume of the Transactions of the Ophthalmological Society of the United Kingdom, he stated his belief that there was but one kind of optic neuritis from intracranial disease; also that uniocular optic neuritis rarely occurred in cases of intracranial tumour. He considered it important to distinguish between the development of neuritis and consequent loss of vision from a foreign body and loss of sight from a destructive lesion. Thus hemiopia was usually the result of a destructive lesion, and in itself implied no change in the fundus. In the ordinary hemiopia from hæmorrhage or clot fundal changes did not occur. With regard to the question of the mode of production of optic neuritis, against von Graefe's view that it was caused by raised intracranial pressure inducing venous congestion in the central vessels of the optic nerve was the fact that a small tumour might cause intense optic neuritis, whereas a large hæmorrhage might not be accompanied by any optic neuritis. He regarded the view of Benedict as "the most plausible"—namely, that of reflex vaso-motor action inducing instability in the grey matter and influencing vessels in the optic nerves. A further plea for the early and systematic use of the ophthalmoscope arose from the fact that the best time for treatment of optic atrophy was early in its appearance. Dr. Jackson's Bowman lecture before the Ophthalmological Society in 1885 was a philosophical treatise on Spencerian lines, but with a practical side. In it he showed the benefit of coöperation of specialised fields of research and knowledge. He also dealt with the complexity of nervous diseases, such as epileptic paroxysms. Dr. Taylor said it was not easy to sum up briefly the outcome of Dr. Jackson's teaching, but in addition to the points mentioned he was much impressed by the educative effect of work carefully and energetically pursued at an ophthalmic hospital. Such work need not lead to a mere barren specialism or differentiation, nor had it done so; for, in addition to definite increase of knowlege of eye conditions, it had led to discoveries which had been a means of investigation of several important diseases, and had produced

coöperation between neurologists and ophthalmic surgeons in the study and treatment of different morbid conditions. In conclusion, Dr. Taylor expressed the hope that what he had said might open to some a new book, while to others it might be a reintroduction to an old acquaintance. To him, a study of these papers had been a source of much interest and great pleasure, and he had been impressed anew with the marvellous powers of one who was to many of those present a constant stimulus, and who was to him, in addition, a very dear friend.

MEDICAL SOCIETY OF LONDON.

Gunshot Wounds of the Peripheral Nerves.

A MEETING of this society was held on Nov. 1st, Dr. W. PASTEUR, the President, being in the chair.

Mr. WILFRED TROTTER'S paper opening the discussion on Gunshot Wounds of the Peripheral Nerves from the Surgical Aspect is published in full in our columns this week.

The discussion was continued by Sir FREDERIC EVE, whose contribution, conjointly with Dr. R. S. WOODS, will be found in another column.

Dr. E. F. BUZZARD said that information was required concerning three points especially: (1) which cases should be operated upon; (2) what should be done at the operation; (3) how could pain be relieved. With regard to the first point, it was difficult to lay down any rule, but he thought it wise to explore in cases of doubt. Whether operation should be performed or not depended upon whether the local conditions were favourable to return of function. He was sceptical as to the value of the electrical reaction of degeneration It was influenced by the treatment which had been applied. The question as to the procedure which should be adopted at the operation when a fusiform swelling was found consisting largely of scar tissue, but carrying many nerve fibres, was difficult to decide. In peripheral nerve lesions he advised that the nerve should be examined carefully both with the eye and with the finger. Another point which had to be decided was the proper treatment in the case of partially divided nerves. Whether the nerve were excised or merely sutured, incomplete recovery would follow. Each case required separate consideration. Pain and hyperæsthesia of a most severe type might continue for months. In such cases operative treatment was required, and excision might be necessary although the injury was only partial. Injection of alcohol into the proximal end of the nerve was of great value as a means of abolishing the pain.

Mr. BERNARD ROTH was of opinion that all cases in which definite recovery was not taking place after a few weeks should be operated upon. To determine this point two or three examinations must be made by the same person, in the same room, at the same temperature, and in the same manner. The operation should be performed as soon as the wound was healed, for the longer the interval the more difficult was the procedure. In a large majority of the cases the symptoms were due to compression merely. If the nerve were partially severed he favoured leaving the undamaged fibres and approximating those which were divided. When a so-called neuroma was found this should be left if it affected only a part of the nerve. It could be removed afterwards if necessary. He then dealt with the post-operative treatment and with the varieties of splints suitable for the different lesions. If the leg were affected a suitable walking instrument should be provided to prevent dropping of the foot. It was the efficiency of after-treatment which often decided the degree of recovery.

Dr. E. G. FEARNSIDES agreed with Dr. Harris that accurate chartings of the interferences with sensibility were of greater value in estimating the completeness or incompleteness of the injury than the presence of complete muscular paralysis with the reaction of degeneration. The alteration should be charted at varying intervals, special attention being paid to the delineation of the borders at which the patient appreciated any change in the sensation evoked by the stimulus, and the various charts so obtained compared with one another before any complete diagnosis or prognosis could be made. At first motor losses and areas of sensory interference often did not match the anatomical distribution of any one or more nerves. It was important to attempt to separate disabilities owning gross mechanical causes from those of directly nervous origin. He still thought that the nerve fibres underlying deep sen ibility run a course to the spinal cord different from that of the fibres which underlie cutaneous sensibility. One should not speak of "ulnar" or "median" anæsthesia, for in each case it varied with the situation of the injury as well as with its extent. In cases of brachial plexus injury the association of pain due to an involvement of a peripheral nerve, with referred neuralgia due to visceral disease, was not infrequent.

Dr. F. HERNAMAN-JOHNSON demonstrated the Lewis Jones condenser, and made a plea for the standardisation of the method by which it was used. He advised also the application of both electrodes to the muscle and the habitual use of the same solution. It was necessary to work from a high power to a low, and the limbs should always be warm if reliable data were to be obtained.

Dr. WILFRED HARRIS and Mr. WILFRED TROTTER briefly replied.

Dr. Wilfred Harris's address will appear next week.

Reviews and Notices of Books.

Lectures on the Heart.

By THOMAS LEWIS, M.D. Lond., F.R.C.P. Lond., D.Sc. Wales, Physician, City of London Hospital; Assistant Physician and Lecturer in Cardiac Pathology, University College Hospital, London. New York: Paul B. Hoeber; London: Shaw and Sons. 1915. Pp. 124.

THIS volume contains five lectures which were delivered by Dr. Lewis in America in the autumn of 1914: (1) a lecture delivered before the Harvey Society of New York; (2), (3), and (4) the Herter lectures delivered at the twenty-fifth anniversary of the Johns Hopkins Hospital, Baltimore; and (5) an address delivered at the opening of the Faculty of Medicine, McGill University, Montreal.

The Harvey lecture was on the excitation wave in the heart. Dr. Lewis first considers some general principles concerning the electric events which are associated with the contraction of a simple strip of muscle. Having pointed out that when muscle is active it is in a state of relative negativity, in precisely the same sense that the zinc of a battery is relatively negative, he further shows that the excitation wave is intimately bound up with the contraction wave; it precedes it by an extremely short interval, and is presumably the result of those physico-chemical processes which at any point immediately precede actual contraction. Dr. Lewis next discusses the origin of the excitation wave in the auricle, and the centre in which the wave originates; the excitation wave in the ventricle then receives notice, and some interesting remarks are made on the natural rate of conduction, which in the region where the muscle is thinnest approaches or surpasses 2000 mm. per second. The whole of this lecture needs most careful reading, but will well repay study as a valuable introduction to clinical electrocardiography.

The subject of the Herter lectures was "Clinical Medicine and Laboratory Methods." The electrocardiograph is a comparatively new instrument, but important results have already been obtained. The records obtained by the instrument at first sight appear intricate and involved, but on closer acquaintance will be found of the greatest interest and value. In the first lecture Dr. Lewis explains the various readings which may be obtained and their value in clinical medicine. At most large hospitals the necessary instrument is now installed, and students will have ample opportunities of seeing the tracings and studying the curves in connexion with the patients from which they were observed. The various forms of cardiac irregularity are duly explained by Dr. Lewis, and excellent reproductions

of curves are given by means of which the earlier lessons in the reading of the curves may be learned. In the second lecture the relation of auricular systole to heart sounds and murmurs is discussed, the condition of mitral stenosis receiving special attention. In the third lecture some interesting observations are made upon dyspnœa, with special reference to acidosis.

The final lecture, delivered at McGill University, is entitled "Observations upon Cardiac Syncope." The remarks on the causes of cardiac syncope and unexpected deaths of cardiac origin will be found of considerable interest.

This volume contains material which cannot be found in ordinary text-books. A large amount of original observation is disclosed, and it will especially appeal to those who wish to study an aspect of diseases of the heart which opens out large fields of fresh interest and study.

A Text-Book of Pathology.

By ALFRED STENGEL, M.D., Sc.D., Professor of Medicine, University of Pennsylvania; Physician to the Pennsylvania and to the University Hospitals; and HERBERT FOX, M.D., Director of the Pepper Laboratory of Clinical Medicine, University of Pennsylvania; Pathologist to the Philadelphia Zoological Garden. Sixth edition, reset. With 468 text illustrations, many in colours, and 15 coloured plates. London and Philadelphia: W. B. Saunders Company. 1915. Pp. 1045. Price 25*s.* net.

A SIXTH edition of a text-book on pathology hardly requires a recommendation from us, as readers have evidently already formed their opinion. Professor Stengel's text-book was last noticed in THE LANCET of Nov. 9th, 1907, where attention was drawn to the comprehensive character of the section on special pathology and the author's evident intention to keep the information up to date. This impression is now confirmed by the collaboration in the present edition of Dr. Herbert Fox, whose qualifications give him claim to speak on both human and animal pathology. We have always felt that an intimate knowledge of morbid processes in the lower animals should conduce to a wider view of the conditions occurring in man. Many sections have been largely recast or rewritten, of which those on Inflammation and Diseases due to Bacteria may specially be noted. Technique has wisely been removed altogether, the book is large enough without. Perhaps in the next edition bacterial diseases might be extruded to a special treatise. American books have an undue tendency to grow larger and heavier with each new edition, whilst there is no collateral evidence that the brain of the student and general practitioner—for whom this book is intended—is undergoing functional hypertrophy. The illustrations are excellent and over 100 new ones have been added.

Encyclopædia Medica.

Under the general editorship of J. W. BALLANTYNE, M.D., C.M., F.R.C.P. Edin. Second edition. Vol. I.: Abattoirs to Asphyxia. Pp. 744. Vol. II.: Aspiration to Chlorodyne. Pp. 677. London and Edinburgh: W. Green and Son. 1915. Price 20*s.* net each volume.

THE first two volumes which are before us of the second edition of this great medical encyclopædia resemble externally the corresponding numbers of 16 years ago: size and binding are the same, but the new letters are of brighter gilt and do not reach quite so far down the alphabet—hence we are to expect this time more than the 13 volumes. The preface, however, assures us that internally the volumes have been thoroughly revised, and while some articles have required very few alterations, others have had to be rewritten or replaced. In every instance in which it was found practicable the original author has revised his article, and perhaps—we say it with caution—this may account for the bulk of the articles which require so little alteration. It is difficult to believe that more than half a generation can have cast no new light on any medical subject, however commonplace. Quite new headings in Vol. I are to be found for articles dealing with acute abdomen, acidosis, adenoids, amœbiasis, anchylostomiasis, and antenatal pathology and hygiene, and it is under these and a number of other new headings in Vol. II. that the practitioner of 20 years' standing may need to renew his student days. When we reviewed Vol. I., the first edition of the work, in 1899 we commented on the fact that some of the articles showed haste in their preparation and did not impart as much information as do the chapters on the subjects in the more modern text-books. This, at all events, does not hold for the second edition, which may well be used as a book of reference for the general practitioner. It is impossible to criticise the articles seriatim, but the volumes will remain on the library table, and the more important contributions receive notice from time to time.

LIBRARY TABLE.

Typical Flies: A Photographic Atlas of Diptera, including Aphaniptera. By E. K. PEARCE. Cambridge University Press. 1915. Pp. 47. Price 5*s.* net.—This brochure contains 45 pages of photographs of flies with an explanatory legend beneath each figure, and is preceded by a brief classification of Diptera according to Brauer, and succeeded by an index of scientific names only. The work is really what it is described to be in its title—that is to say, its scope is not restricted to those flies which play a part in the dissemination of disease by various methods, as is apt to be at the present moment the case with books dealing with these insects. The author, in fact, presents us with photographs of many flies of diverse groups, all of which have had to be enlarged to render them of any service to the student. They are not, however, coloured, and thus their advantage over well-executed process blocks is not entirely obvious. Especially is this the case with those figures in which the object portrayed is not in the very pink of condition for photographic reproduction. To the entomologist, who is well acquainted with the Diptera, this is of little moment, but to the intending learner it is another matter altogether. The learner will find himself greatly aided by a perusal of the author's preface, in which a quantity of valuable practical hints as to the collecting and preservation of flies is stored for his accurate guidance. To the entomologist the Diptera present nowadays the most promising field for new discovery, being, as they are, very little known as compared with Lepidoptera and Coleoptera. We can therefore commend this volume as an incentive and as a valuable aid to study.

A Treatise on Materia Medica and Therapeutics. By RAKHALDAS GHOSH, Lecturer on Materia Medica, Calcutta Medical School. Edited by B. H. DEARE, Lieutenant-Colonel, Indian Medical Service, Professor of Materia Medica and Clinical Medicine, Medical College of Bengal, with the assistance of BIRENDRA NATH GHOSH, Lecturer on Pharmacology, College of Physicians and Surgeons of Bengal. Sixth

edition. Calcutta: Hilton and Co. 1915. Pp. 698. Price 7*s.* 6*d.*—In our previous reviews of this work[1] we explained its nature and scope and expressed the favourable opinion we had formed of it. The issue of a new edition of the British Pharmacopœia has necessitated bringing out another edition. The text has been carefully revised and the necessary alterations made according to the strength of preparations which had been changed. The doses are now given in conformity with both the imperial and metric systems.

In former editions the drugs were arranged in alphabetical order; this plan has now been relinquished, and they are classified according to their pharmacological and therapeutic uses. This is certainly more advantageous for students of materia medica and therapeutics, whilst it will not render the book less valuable as a work of reference. The son of the author of the original work has taken a definite place in editing the new edition.

A Text-book of Physiology for Medical Students and Physicians. By WILLIAM H. HOWELL, Ph.D., M.D., Sc.D., LL.D., Professor of Physiology in the Johns Hopkins University, Baltimore. Sixth edition, thoroughly revised. London and Philadelphia: W. B. Saunders Company. 1915. Pp. 1043. Price 18*s.* net. —The fifth edition of Professor Howell's text-book was reviewed in our columns as recently as March 21st, 1914, and we then wrote that the book was a safe and comprehensive exposition of the present state of our knowledge on physiological matters in application to medicine. The author alludes in the preface to this sixth edition to the practical impossibility for a single worker of keeping in intimate touch with the shifting points of view in regard to the many problems considered in a general book of this character. We fear that this is a prelude to the replacement of yet another text-book by a system, and would encourage Professor Howells, who is a doctor in four faculties, in the belief that a general view of a subject like physiology is more easily attained and transmitted by one who sees the whole area in good perspective.

JOURNALS.

Quarterly Journal of Medicine. Edited by WILLIAM OSLER, J. ROSE BRADFORD, R. HUTCHISON, A. E. GARROD, H. D. ROLLESTON, and W. HALE WHITE. Vol. IX., No. 33. October, 1915. Oxford: At the Clarendon Press; London, Edinburgh, New York, Toronto, and Melbourne: Humphrey Milford. Subscription, 25*s.* per annum; single numbers, 8*s.* 6*d.* net each.—The contents of this number are: 1. Clinical Observations upon Atrio-Ventricular Rhythm, by G. D. Mathewson. Records are given of a case in which there was a rhythmical change in the mode of the heart's contraction, from which it would appear that the beat was initiated by the sino-auricular and atrio-ventricular nodes alternately. Corresponding rhythmical changes were observed in the first sound and in an accompanying mitral murmur. A critical study of the records and of the effects produced upon them by stimulation and depression of the controlling nerves of the heart leads Dr. Mathewson to the suggestion of recurring increase of vagal tone as a possible explanation of the alteration of the rhythm. 2. A Case of Pancreatic Insufficiency, by E. I. Spriggs and A. J. Leigh. An interesting study of the metabolism of a patient with the symptoms of chronic disease of the pancreas is given, together with records of observation in five periods extending over 18 months in all. Some of the chief results are as follows: Trypsin could not be detected in the fæces and Sahli's capsules were not digested. Diastase was present in the urine in normal amount. An average of 302 grammes of fat per day was lost in the motions on admission, from 25 to 59 per cent. of the caloric energy of the food being lost in this way. The proportion of the fat in the food lost in the fæces varied from 55 to 99 per cent. The emulsified fat of milk was better absorbed than that of butter, meat, or cod-liver oil. The proportion of the total fat in the fæces in the form of fatty acids and soaps was higher than normal throughout, the average of 54 days' figures being 87 per cent. Nearly half the nitrogen of the food appeared in the fæces. Sugar was present in the urine, and at first soon disappeared upon a suitable diet, but in the successive periods of treatment a longer period of restricted diet was necessary to induce disappearance of the sugar. There was no evidence of acidosis. 3. Researches on the Perfused Heart: Some Observations on the Cardiac Reserve, by W. Burridge. Some interesting and important conclusions are obtained from a study of records of the contraction of the heart of frogs perfused with various solutions. It is first pointed out that the function of contractile capacity and the ability to contract on excitation by induced shocks are entirely distinct, since owing to loss of excitability the excitation may give no evidence of an intact store of contractile material able to contract. In all the hearts examined it has been found possible by properly using potassium salts to demonstrate the presence of a certain capital stock of contractile material, which for the sake of brevity Dr. Burridge designates "C." This quantity "C" varies from heart to heart, but is constant in value under ordinary circumstances in any particular heart. The majority of drugs, though they may cause great variations in spontaneous activity, do not alter the value of "C," which seems to be altered only by coagulation or rigor. It is suggested that the heart has a certain capital stock of contractile material, the activity of which is evoked by the calcium of the blood, and that digitalis is a drug which enables a given tension of calcium to evoke the activity of a greater proportion of the whole contractile material than is the case in its absence. 4. A Review of some Recent Researches dealing with Typhoid and Paratyphoid Infections, by A. C. Inman. The clinical applications of methods for determining the presence of typhoid and paratyphoid infections are carefully considered, including blood cultivation in the early stages, recovery of the organisms from the fæces, and quantitative agglutination methods at other stages, together with the technique of these different procedures.

Philippine Journal of Tropical Medicine, Vol. X., Nos. 2 and 3.—The first of these numbers contains two papers on the subject of Beri-beri, one being by Dr. R. R. Williams and Dr. N. M. Saleeby, giving the results of their experimental treatment of the human form of the disease with the constituents of rice polishings; to this interesting article we drew special attention in THE LANCET of Sept. 25th. The second of the papers is contributed jointly by Dr. Williams and Dr. B. C. Crowell, and deals with the Thymus Gland in Beri-beri. The evidence brought forward by these investigators indicates that there is no apparent fundamental connexion between the disease and atrophy of this gland; when the latter condition occurs, as it frequently does, in birds fed on polished rice, it is due to some other cause. The thymus gland contains no extraordinary amount of vitamine, and the protective effect of administering the tissue is probably due in great part to purine and pyrimidine derivatives. Lastly, the presence of a comparatively large amount of thymus gland in young animals does not appear to be responsible for their modified susceptibility to beri-beri.—Dr. Otto Schöbl gives the results of his practical experiments with some enriching media recommended for assisting the bacteriological diagnosis of Asiatic cholera. He thinks that Kraus's medium will be found particularly useful in conducting the search for cholera carriers.—A description is given by Dr. Marshall A. Barber of his experiments on the immunisation of guinea-pigs by the inoculation of avirulent tubercle bacilli in agar, and he also contributes some observations on animals inoculated with tubercle from lepers, this being a continuation of previous research work on the subject. He inoculated five series of guinea-pigs or monkeys with spleen-pulp taken post mortem from lepers; lesions of tuberculosis or similar to those of that disease developed in two of the series; and in a group of guinea-pigs inoculated with a strain of tubercle of leper-spleen origin the post-mortem examination revealed a remarkable enlargement of the spleen.—The value of the coccobacillus acridiorum, d'Herelle, in the destruction of

[1] THE LANCET, Nov. 13th, 1913, p. 1401, and March 18th, 1911, p. 745.

locusts was also tested by Dr. Barber in association with Mr. Charles R. Jones, of the Bureau of Science, Manila. This method, which had been used previously for the above purpose with some success in South America, gave no results of any practical value in the Philippines.

The second number of the Journal (Vol. X., No. 3), now before us, is devoted entirely to the continuation of the "Studies on Malaria" in the Philippine Islands, and deals particularly with the distribution of the commoner forms of anophelines found in that region, as well as with the incidence of the disease. The four observers concerned in this study of malaria are M. A. Barber, Alfonso Raquel, Ariston Guzman, and Antonio P. Rosa. According to them the commonest species in that part of the Philippines which they have surveyed, are A. rossii, A. febrifer, A. barbirostris, A. maculatus, and A. sinensis, and these may be regarded as probably the species of anophelines most usually present in the archipelago. The two which are the chief transmitters of malaria in the islands are A. febrifer and, to a less extent, A. maculatus. The former is a stream-breeder, and is widely distributed; it seeks houses and bites human beings readily. The experience of these observers is that in the destruction of stream-breeding anophelines, by means of larvicides, in the Philippines we have a practical measure well within the means of many malarious communities for reducing the amount of the prevailing disease in their districts.

New Inventions.

FRACTURE CLAMPS FOR FIXING AND REDUCING FRACTURES OF THE EXTREMITIES.

H.H. Prince Frederick U. Duleep-Singh, M.V.O., sends us a description written by H.H. Maharanee from the Hôpital Temporaire de Bellevue-Naugeat of some fracture clamps used with success in the hospital for the treatment of fractures of the extremities, especially when compound or associated with much laceration of the soft parts. The clamp has been designed by Dr. Sanz de Santa-Maria, director of the hospital, and Dr. Salone, attached to the colonial troops.

Each clamp consists of two wings of thin curved strips of metal, to be firmly embedded in plaster above and below the fracture, and of a rod containing a double extending screw connecting the wings. This rod is attached by a universal joint at each end after the wings have been applied, so that the limb can be placed at leisure in any desired position and any necessary degree of extension produced. Dr. Sanz has also written calling attention to the ease and convenience of application, which allows of complete fixation of the fracture with the freest possible access to the damaged soft parts for inspection and treatment. Although apparently new in France, the clamps are essentially identical with those described by Hackenbruch of Wiesbaden in THE LANCET of March 14th, 1914, p. 744.

Reports and Analytical Records
FROM
THE LANCET LABORATORY.

AQUA DE CASAES MINERAL WATER.

(AQUA DE CASAES, LTD., BYRON HOUSE, 85, FLEET-STREET, LONDON, E.C.)

THIS water, containing iron in a novel form, is drawn from springs in a remote part of Portugal. The water attracted attention first in that it appeared to benefit cases of anæmia. In this direction it has been used frequently since, and considerable testimony has been given to its effects by Portuguese medical men. When drawn fresh from the spring it is stated to be decidedly radio-active. We found the water to contain iron partly in fine suspension and partly in the form of per-sulphate. The complete analysis was as follows, the results being returned in grains per gallon: Sulphates (SO_3), 22·4; chlorides (Cl), 1·4; iron (Fe_2O_3), 4·90; calcium (CaO), 8·40; and magnesia (MgO), 2·10. The water has an acid flavour.

PARASITIC SOAP.

(JEYES' SANITARY COMPOUNDS COMPANY, LIMITED, 64, CANNON-STREET, LONDON, E.C.)

This is a well-prepared soap containing a definite proportion of Jeyes' Fluid. It lathers freely, and besides exercising a pleasant detergent action, leaves a trace of disinfectant on the skin which is repellent to lice or other parasites. It is stated that it is effective most when the body is lathered and the lather allowed to dry on. Wearing apparel is turned inside out and similarly rubbed with the same lather and allowed to dry.

VARIOUS ORGANIC CHEMICALS.

(W. MARTINDALE, 10, NEW CAVENDISH-STREET, LONDON, W.)

With characteristic energy and perseverance Mr. Martindale has turned his attention to manufacturing several of those organic chemicals previously made in Germany, and judging from a number of samples which he has sent to us he is meeting with a success which deserves attention. Amongst the well-prepared specimens of drugs sent to us were the following: trikresol, chloralamide, thiosinamin, sodium glycocholate, allantoin, hexamethylenetetramine, bismuth oxyiodogallate, resorcin acetate, pyrogallol acetate, thiosinamin ethyl iodide, quinine urea hydrochloride, and paramonochlorphenol. There are in this list substances which have now become difficult to obtain.

AGGLUTINATION TESTS.

(BURROUGHS, WELLCOME, AND CO., SNOW HILL BUILDINGS, LONDON, E.C.)

We have received specimens from the above firm of B. typhosus serum and B. typhosus suspension for agglutination tests. These preparations are obviously convenient in bacteriological diagnosis. They supply, on the one hand, a reliable suspension of the micro-organism, and, on the other, a stable serum obtained from animals injected with pure strains of the organism.

PAX.

(AGENTS: C. HAND AND CO., 12, MOOR-LANE, LONDON, E.C.)

Pax is a fluid insecticide of the colour of brown sherry. We examined it and found it to contain true carbolic acid and not phenoloids. Associated with this is formaldehyde. The preparation is well made, and besides a powerful disinfectant and insecticide, possesses strong cleansing properties on account of the liquid soap present. Its chief claim, however, is for the destruction of insect and pest life. In all cases directions are given for dilutions.

THE LANCET.

LONDON: SATURDAY, NOVEMBER 6, 1915.

The General Medical Council and the Medical Problems of the War.

THE winter session of the General Medical Council was opened at the office of the Council on Tuesday last, Sir DONALD MACALISTER, the President, being in the chair. The proceedings of the session commenced, as usual, with a Presidential address whereof a large part was devoted to the consideration of the medical problems of the war. Sir DONALD MACALISTER quoted the highest authority as stating that "within the next few months every qualified man of suitable age who is fit for the work of an officer in the medical corps will be needed." He acknowledged, therefore, that civil practice in many of its branches must yield place to practice with the troops or in the military hospitals, wherefore the apprehension of the medical man who goes into the army, that his patients may be alienated and his practice absorbed by medical neighbours who stop at home, is a most serious matter. Sir DONALD MACALISTER pointed out that bodies such as the local Medical War Committees set up in England and Scotland by Central Medical War Emergency Committees are endeavouring to remove this apprehension, and to promote equitable agreements between practitioners remaining on civil duty and their colleagues on active service; and he added the grave warning that the failure of any practitioner to observe the terms of such an arrangement after adoption would certainly be "regarded as dishonourable by his professional brethren of good repute and competency." The significance of Sir DONALD MACALISTER'S words lies in the fact that the reprehensible conduct alluded to, in accordance with a legal decision, might form the proper subject of inquiry by the General Medical Council.

As for the supply of candidates for the depleted ranks of medicine during the next five years, Sir DONALD MACALISTER'S address was not very optimistic—and how should it be? He pointed out that 240 practitioners have this year been registered in the Colonial List and the Foreign List, and he gave reasons for believing that the number of Canadian practitioners on the Medical Register would soon be increased considerably by the establishment of complete reciprocity between this country and the Dominion. There must, however, be proper observance by the Canadian candidates for registration of the legal formalities of their universities or diploma-granting institutions. With regard to the position of medical students as a section of the general population that is clearly of fighting age and material, Sir DONALD MACALISTER wished, as everyone in a teaching post at a medical school or at a hospital wishes, that the military authorities would give clear guidance on the question of whether it was the immediate duty of these students to offer themselves for combatant service, or whether it was held that they would serve their country better by remaining at the schools with the view of securing as early qualification as possible. The War Office has deemed it advisable not to discourage junior students from accepting combatant commissions, and Mr. TENNANT has stated in the House of Commons that these students would have to decide their course for themselves. Facilities, we believe, have been given to some senior students who had joined the army to return home in order to finish their courses. This is in accordance with Lord KITCHENER'S view, published last August, that "medical students in their fourth and fifth years should continue their studies with a view to qualifying as soon as possible."[1] Lord DERBY'S opinion is precisely the same. The Director-General of Enlistment received the President of the Royal College of Physicians of London, the President of the Royal College of Surgeons of England, the Vice-Chancellor and Dean of the Faculty of Medicine of the University of London (Sir ALFRED PEARCE GOULD), and the Dean of St. Bartholomew's Hospital (Dr. L. E. SHORE) on Tuesday last, when he stated that it is the duty of medical students other than those in their fourth and fifth years of study to join His Majesty's Forces. The Medical Director-General of the Navy has informed Sir DONALD MACALISTER that a senior student can be demobilised after six months' service as a surgical dresser with the fleet to resume his studies with a view to qualification, his place being taken by a less senior student, showing that in the Naval Medical Service the idea of service by rota will be officially recognised.

The further proceedings of the General Medical Council will be published as usual in subsequent issues of THE LANCET.

Motherhood, Infancy, and the War.

IN times of peace it is easy for a prosperous country to forget that national existence is, in part at least, dependent on the quantitative value of its population. This truism was realised at its proper value by only a few of our more thoughtful and far-seeing countrymen until the outbreak of the war; now, with the national losses on the battlefields of the past year totalled and tabulated for us, we can all appreciate its obviousness. Yet some 35 years ago, by reason of accurate statistical figures then for the first time available, it became apparent that if the birth-rate continued to fall as it had been falling, and if the death-rate among infants

[1] THE LANCET, August 21st, p. 413.

under one year of age continued at the high level then obtaining, a time was not so far distant when the total number of the population would become stationary or even enter upon the downward path that leads to national extermination. To meet this danger organised effort was imperatively necessary and as the problem seemed to offer better hope of solution by expedients which aimed at preventing unnecessary wastage of infant life rather than by attempts at increasing the supply, the energies of the reformers were directed to the causes of infant mortality and the antidotes. If at first these efforts were incommensurate with the energy expended, it was largely owing to the fact that it was wrongly assumed that infants under one year of age died from the same causes as those to which the deaths of the adult population were to be attributed. Owing to the innumerable reforms in public sanitation and personal hygiene which distinguished the closing years of last century, the death-rate of the general population fell by sensational leaps. But the improved conditions of the water-supply, of the drainage, of housing conditions, as well as many other sanitary and hygienic reforms, for all their influence on the adult death-rate, apparently made no impression whatsoever on the death-rate among infants. Infant mortality stood exactly in the same position at the end of the nineteenth century as it stood in the year 1864.

Since the beginning of the present century the death-rate among infants has fallen at a rate which is even more rapid than that of the fall among adults during the previous 25 years. This fall must have been due to some cause which was not effective previous to this period. The cause is undoubtedly the greater care which has been exercised in preserving what has now become our most valuable and precious asset. Synchronously with this fall in the infant mortality-rate there began to be put into practice in this country the methods of improved tending of young infants which the experiences of the late Professor PIERRE BUDIN in his infant consultations in France, and of other zealous followers of this great teacher in Belgium and elsewhere on the continent, had shown to be followed by excellent results. The first practical step to be taken was the well-known experiment of Mr. BENJAMIN BROADBENT in Huddersfield in the years 1904–1908; then followed the opening of the first infant consultation in St. Marylebone in 1906; and in the following year the institution of similar schools for mothers in Birmingham, Reading, and St. Pancras. The results of these experimental and pioneer efforts are now so well known that further reference is unnecessary. But the facts which have emerged from the collective experiences of many infant welfare centres following the same lines conclusively prove that the main causes of infant mortality are ignorance and overcrowding, together with the septic and zymotic infections to which overcrowding and bad housing inevitably dispose. Further, the practical antidote to this association of evils, which is sapping the physical efficiency of the nation, is well known and available, leaving on one side the great schemes of prevention which imply rebuilding of urban areas. The systematic teaching of mothercraft, a new word which has been felicitously coined to cover the science and art of safeguarding the health of the expectant, the puerperal, and the nursing mother is the principal ingredient in this antidote. The difficulty at the present time is not want of knowledge in these matters, but the impediments which lie in the way of wide and rapid dissemination of teaching in the directions where it is most urgently required. Mothercraft is not instinctive; the human organism has been endowed with something greater than instinct—namely, reason or intelligence, a faculty which enables the individual to profit by the experiences of the past and the evidences of the present, or even, by analogy and comparison, to indulge in intelligent anticipation of the future. But until it becomes a national habit to regard the knowledge of mothercraft as something to be acquired by study and education, in the same way that a knowledge of horticulture or agriculture can only be acquired by training, and best acquired by deliberate and scientific study, there will remain much work for societies such as the National Association for the Prevention of Infant Mortality to do in all directions.

The great conference which was organised by this association in conjunction with the Central Committee for National Patriotic Organisations at the Guildhall last week represents a concerted effort to focus attention on the need for carrying out an active campaign of education. At this conference inspiring speeches were made by the President of the Local Government Board, the Postmaster-General, the Duchess of MARLBOROUGH, Sir THOMAS BARLOW, Sir JAMES CRICHTON-BROWNE, and many other well-known philanthropists interested in the cause of infancy. All of them told the same tale—the laws of hygiene must be promulgated, mothercraft must be taught, and in the first place skilled effort must be concentrated on the mother as the fountain-head of infant life. Mr. HERBERT SAMUEL, in an entirely admirable address, pointed out that in its provisions for the welfare of motherhood and childhood the State is for once ahead of the nation. This is, indeed, true, for the greatest liberty—for the greatest encouragement is given by the Government to local authorities to spend local as well as national moneys to secure these ends. It cannot, however, be claimed that local authorities have shown any adequate response to the invitation. Something should be done to arouse these administrative authorities from their apathetic attitude in these matters. One of the chief objects of the Guildhall Conference was to stiffen public opinion, so that pressure might be brought to bear on those

recalcitrant local authorities who refuse to accept their urgent responsibility.

Although it may be claimed with considerable confidence that the principles of good mothercraft are now well understood by all who think, and that the knowledge is available for all those who care to stretch out their hand to take it, the same cannot be claimed for the principles which govern the prevention of ante-natal mortality. Therein lies a vast undiscovered country of pathology. But as we now are aware that nearly as many lives are lost to the nation during the nine months previous to birth as are lost in the twelve months which are subsequent to it, it is clear that this field of research offers the prospect of great rewards. And in this connexion it is extremely interesting to observe that the report recently issued by the Local Government Board on the subject of puerperal mortality shows that the curve of infant mortality when mapped out for the whole country runs a course almost parallel with that of the death-rate among lying-in mothers. It is quite possible that undiscovered, and indeed unsuspected, infections at the time of or shortly after birth account for a much larger toll of infant life than is usually supposed, and this finds a ready explanation in the undeveloped state of the defences of the new-born baby against bacterial infection through breaches of continuity in the epithelial coverings caused by careless handling of the infant. If this is so, it may be the meaning of the parallelism of the two curves already referred to; for careless obstetric practice is own brother to careless mothercraft, which at no time is productive of greater evil than during the first ten days of life. Here is a direction in which medical men and other skilled observers may be encouraged to work from several points of view, when the combination of their experiences will bear good fruit. Further, as an outcome of the Guildhall Conference it is to be hoped that there may follow some concentration and consolidation of the resources of the various societies which are working independently and uneconomically for the same end. In these days of stress we cannot afford to allow our resources and energies to be wasted.

The Proposed Welsh National Medical School.

THE last 35 years have seen a great increase in the facilities for medical education throughout England. In 1880 there were in England only the Universities of Oxford, Cambridge, London, and Durham, which provided for the complete curriculum of medical study leading up to the granting of a degree in medicine. At that time medical schools like the Owens College, Manchester, and the Yorkshire College, Leeds, had to send their students to London or elsewhere to take their degrees. Then came the founding, in the year 1880, of the great north-country Victoria University, which continued to increase until it was strong enough to split up into its component universities of Manchester, Liverpool, Leeds, and Sheffield. After this it was natural that Birmingham and Bristol should follow suit in 1900 and 1909 respectively. So much for England. Scotland has already five bodies granting medical diplomas and nine complete schools of medicine. Ireland has the same number. It was unlikely that the Principality of Wales should remain content with no national medical school, and as the present critical situation shows it has not done so. The position has been felt the more because since the supplementary Charter of 1906 the University of Wales has been able to grant a medical degree, which in 1911 was constituted a registrable qualification. Hence the board of management of the King Edward VII. Hospital in Cardiff is actively pressing on the Treasury its views for the establishment of a Welsh National Medical School in that city, and the resulting difference of opinion has not yet been reconciled.

The Cardiff medical school has behind it a record of over 20 years of valuable work. For the last 15 years the hospital has been undergoing steady development, and in 1908 Sir DONALD MACALISTER, as a member of Sir THOMAS RALEIGH'S Committee, reported that, given new buildings for the medical school and chairs for the professional subjects as well as for anatomy and physiology, Cardiff possessed all the requisites for a school of medicine. Sir WILLIAM OSLER was able a little later to endorse this view with the provisos that organisation was needed as well as men for the leading posts, and that a Treasury grant was an essential element for success. In 1914 Sir WILLIAM JAMES THOMAS offered a sum of £100,000 to be expended in buildings for the use of the medical school in order to make this adequate as a Welsh National School of Medicine. This year an anonymous gift of £5000 followed for the creation of a maternity ward at the hospital, and with yet other donations forthcoming no monetary obstacle now exists to the scheme. Difficulties, however, began to arise. The inter-departmental committee, in whose hands the question of the foundation of a medical school was left, decided that such a foundation, being in intimate relationship with the larger question of the perfecting of the system of education in general in the Principality, could not be dealt with apart from a reconstruction of the University. Then came the war with its numbing grip on any activities outside its own scope, and with the natural and insistent demand for economy both in the application of public money and in the use of labour for other purposes than those directly concerned with offence and defence. The hospital board has pleaded that the completion of the medical school was a matter of grave public importance in view of the increasing demand for doctors, that the necessary money for buildings is forthcoming from private sources without

touching the question of economy in public spending, and that the work might be carried out by workmen beyond military age who could not directly serve their country in offence or defence. The Treasury has replied that it would be altogether opposed to the national interests to allow a substantial increase of grants at the present time before a satisfactory scheme of organisation had been effected or fully guaranteed, and trusts, therefore, that on reconsideration Sir W. J. THOMAS would agree that the building should be confined for the present entirely to the Physiological Block, which it was understood would, together with the existing buildings, provide sufficient accommodation temporarily for all students expected to attend during the next few years. On the other hand, the Treasury has suggested the immediate appointment of a Royal Commission on the university question. On the undertaking to accept its decision being given the Treasury offered the payment of new grants as soon as Parliament had voted the money. The latest stage in the proceedings is the acceptance of these conditions on Oct. 13th by the hospital board of management, with reiteration of the hope that the "Treasury may grant permission to the donor to proceed forthwith to complete the buildings of the medical school."

The situation presented is a difficult and complicated one, but as far as the information before us warrants an opinion, we must confess to our sympathy with the desire of the Cardiff medical school to build. The money has all been offered by private citizens, and it may be possible to carry out the work by using labour, which could not be made otherwise directly to serve the purposes of the State. The onus of demonstrating the possibility of this naturally rests with the promoters of the building scheme. The larger relations with the reconstructed University of Wales should be capable of solution as easily with complete as incomplete school buildings. The crucial point appears to us to be, Where does true economy lie? We are whole-heartedly on the side of personal economy, no matter what form it may take; and the national resources, at a time when success seems to depend principally on endurance, must be rigidly safeguarded till parsimony reaches to the edge of folly. But the equipment of a medical school is in the nature of an insurance premium, not of ordinary spending. What is paid now will come out again with interest and compound interest in the years to be. There never has been such a shortage of doctors as there is at the present time. Turn to the entries of medical students and then to the obituary column of the war and it will be at once seen that the supply will diminish rather than increase if the present situation continues. By all means let every medical man be spared to help his country to the best of his ability, but let no opportunity be lost of helping to fill the gaps in the profession. We believe that the foundation of a worthy Welsh National School of Medicine at Cardiff will help to fill these gaps.

Annotations.

"Ne quid nimis."

MEDICAL INSURANCE AGENCY.

A MEETING of the committee of the Medical Insurance Agency was held at the offices of the British Medical Association, 429, Strand, W.C., on Oct. 28th, when a very satisfactory condition of affairs was revealed. The report of the chairman, Dr. G. E. Haslip, showed that the business transacted during the September quarter, as compared with the same quarter in 1914, had been well maintained, while for the nine months of the current year the total receipts had been £9741, as against £8557 in the previous year. Life business generally has been difficult to negotiate, as may well be imagined, but Dr. Haslip was able to point out that a fair number of military risks had been put through, although as long as the question of compulsory military service remains unsettled those contemplating life assurance will not look favourably on the terms of the contracts at present offered. The amount actually paid over in support of various channels of medical benevolence during 1915 was up to the date of the meeting £400. The working expenses the chairman reported to have been £232 for the nine months ending Sept. 30th, during which time the commissions actually earned had amounted to £900. It was decided, on Dr. Haslip's proposal, to distribute a further £230 of the earned money, bringing the total sum contributed by the agency to medical benevolence up to £630 for 1915, or double the sum which it was found possible to devote to the same ends in 1914. The £230 were allocated in this manner: to the Royal Medical Benevolent Fund £80, making a total grant for 1915 of £230; to the Guild or ladies branch of this fund £60, making with the previous donation £110; to Epsom College in support of the medical foundation scholarships and medical foundations £45, making with the previous donation £145; to the Royal Benevolent Fund Society of Ireland £30; and to St. Anne's Orphanage, Orpington, £15. We recommend these figures to the notice of all our readers, pointing out that by insuring through the Medical Insurance Agency they are directly benefiting themselves and indirectly contributing to medical benevolence in a manner which is highly appreciated by the institutions concerned. The objects of the agency are to secure for medical men the most favourable terms for all classes of insurance, while assisting in the support of medical charities. After payment of working expenses all the surplus funds are devoted to medical benefit, and £1700 have now been distributed in this way during the short life of the agency. At the same time the insured who have taken advantage of the agency have had refunded to them £5000 in rebates. The agent and secretary of the Medical Insurance Agency, Mr. Guy Elliston, should be addressed care of the British Medical Association, 429, Strand, W.C.

PATHOLOGICAL SURNAMES.

SURNAMES doubtless often record personal peculiarities, for in their origin surnames are either sobriquets or records of tribe and locality and occupation. Thus, the Browns, Blacks, and Whites are very probably descended from men with brown, black, and light hair. It is notable that though

many surnames record facts as to complexion and hair, they rarely, if ever, bear witness to deformity or disease. We search in vain through old name-lists for appellations that may guide us as to the prevalence of physical disabilities, epidemics, or endemic sickness in the past. And in the same direction we find little guidance in the matter of plague or any of the major diseases of the Middle Ages, when, as a rule, surnames began to be assumed in the countries of Western Europe. Lepper is an Irish surname, and Lazarus and Lazare occur in France, but it is a question whether the Irish appellation does not refer to jumping, while Lazarus may mean a beggar in preference to a leper proper. The name of Death occurs in the records of the Royal College of Surgeons of England. It was not an auspicious name for a surgeon, and it is now usually written as though it were a dissyllable, as it may have originally been. Cruickshank doubtless refers to a deformity of the lower extremities, but it is the only name of the kind. At least we can think of no other, unless perhaps Ricketts is one. In the town-ward migrations of Middle Age serfs and in the emigrations of journeymen, the desire to escape from the associations of absurd and ugly names seems often to have been a guiding motive with their bearers. Thus some Germans became Frenchmen in the time of Louis XIV. in order, among other things, to shed off the meaning of their names. In early Tudor times, when the Welsh were compelled to assume surnames by law, whole villages, on the border especially, were named pall-mall and in no very charitable spirit. Neighbours imposed unmentionable names upon their enemies, and villages were said to exist near Wrexham, not so many years ago, where the local Celtic surnames were obscene. The Poles have suffered in the same way from names imposed on them by cynical Prussian officers after their country had been partitioned under Frederick the Great. Many of these names must have been conferred to commemorate malformation or disease. It is a question whether such names exist to-day anywhere save in out-of-the-way places. There can be no doubt that peasant names tend to travel very little. They remain in a class and a locality for ages, even when their very unsavoury meaning is quite clear. Customary use abolishes in the neighbourhood the significance of actual meaning. Perhaps local practitioners, readers of THE LANCET, may be able to adduce some of these curious surnames.

FLAT-FOOT AND THE SOLDIER.

FLAT-FOOT is a serious disability to the soldier, but it is not an easy condition for the medical officer to detect in examining recruits. It is not possible to say in any particular case that some slight tendency to flat-foot will be aggravated and not relieved by military training, and there is no one patent way of remedying a condition dependent on many causes and manifesting itself with varying symptoms. For some years past the makers of flat-foot plates or arch supports have done a considerable trade in the United States by selling a support to everyone who complained to them of any foot trouble. Lately some of these tradesmen have come to England and widely advertised their wares, offering to clients the gratuitous advice of an "orthopædic specialist." To judge from results, it would seem that this advice generally takes the form of "Buy our goods!" for many out-patients at hospitals wearing these appliances are found to be suffering from conditions other than flat-foot, for which the supports are quite unsuited. The diagnosis of flat-foot is easy enough when there are symptoms of pain or disability, but as the height of the plantar arch and the proportion of the sole which rests on the ground vary greatly in normal persons, it is sometimes difficult to decide whether a foot is unduly flat or not. The strong and mobile feet of ballet dancers often have very little arch. Cases of in-ankle or over-pronation of the foot, due to relaxation of the astragalo-calcanean ligaments, are often confused with flat-foot. In many of these cases the arch yields sooner or later, but in some it remains of good shape. The cause of flat-foot (excluding joint disease) is a disproportion between the strain to which the plantar arch is exposed and its power of resistance. If the one is increased or the other diminished beyond a certain point, trouble follows. Overworked errand boys and shop assistants furnish many cases of overstrain. Rachitic children, on the other hand, offer many examples of deformity, due to diminished resistance. Where there is a tendency to rheumatism, whether from septic absorption or some other cause, the overstrained joints of the tarsus are often selected by a mild chronic inflammation, which sets up secondary reflex spasm in the abductor muscles of the foot, and the painful, stiff, everted flat-foot results. Such cases are far more common in males than in females. The choice of treatment will be influenced firstly by the presence or absence of this rigidity and spasm. When they are present, and complete rest and the frequent application of hot air or radiant heat do not relieve these symptoms, tenotomy and temporary fixation in an over-corrected position are called for. Operations on the bones, such as Ogston's, are seldom necessary. In slight cases when the foot is mobile and the deformity slight, raising the inner side of the boot from a quarter of an inch to half an inch and filling up the inner side of the "waist" with the so-called valgus heel are often enough to relieve symptoms. In a rather more severe grade of deformity properly shaped arch supports of steel or an alloy of aluminium are effectual, combined in marked cases with the wedge sole. In all severe grades of flat-foot walking instruments, consisting of steel springs or rigid metal stems reaching to the calf, are necessary. In all cases tiptoe exercises are valuable, and the patients should be taught to walk and stand without turning out the feet, the precepts of dancing mistresses and drill instructors to the contrary notwithstanding. No one form of treatment is applicable and sufficient for all cases of flat-foot, but those means should be selected which are best suited to the kind and degree of deformity and disability, and all the circumstances of the case have to be taken into account.

A NEEDLE LODGED IN THE DUODENUM.

IN the *Canadian Medical Journal* of September Mr. W. A. Lincoln has reported an interesting and unusual case in which a needle remained lodged in the duodenum for a year. The patient was a young woman who had sustained a severe head injury in a street-car accident. She remained in bed for several weeks, during which time there was a good deal of delirium. She was difficult to control

and had a mania for biting and putting things in her mouth. She was several times found with pins in her mouth, but was not known to have swallowed anything. She recovered, but soon began to complain of sharp pain in the region of the umbilicus or a little above it, which came on a few minutes after taking food. The nature of the food made no difference: liquids caused as much pain as solids, and in both cases the pain ceased at the end of digestion. At times she was nauseated but never vomited. Blood or tarry material was never observed in the stools. Medical treatment was tried without avail. A bismuth meal was administered and the X rays revealed a needle in a perpendicular position one inch to the right of and the same distance above the umbilicus. A stereoscopic picture showed that the needle was in front of the spine and fairly deep in the abdomen. The patient was kept under observation and other pictures taken, but apart from moving laterally the needle did not alter its position. Laparotomy was performed. On following the pylorus round to the duodenum the needle could be felt embedded deeply in the duodenum behind the transverse colon. At first it was difficult to move it, but at length it was worked up and the point made to perforate above the transverse colon, from which place it was easily extracted, the opening being closed with a purse-string suture. The needle was blackened and eroded—evidence that it had been in the body for some time. Good recovery followed and the patient remained free from digestive troubles. She did not think that she could have swallowed the needle except when she was delirious. The interesting points are the fact that the needle remained lodged in the second part of the duodenum for a year and the dyspeptic symptoms which it caused.

ITALIAN VIEWS ON EUGENICS.

A DISCUSSION on the essentials of eugenics has been carried on in five recent numbers of *La Clinica Ostetrica*, between Professor F. La Torre and Professor C. Gini. The former, who is editor of this periodical, insists that there are many arguments which militate in favour of the paternal influence on the product of conception. Professor La Torre points to the necessity that eugenics should be based on biology, especially on clinical experience and observation, in order to ascertain under what conditions the fœtus can develop healthy and strong, and what are the factors which hinder such development. In support of this point of view he remarks that it is universally admitted that in order to secure fine horses, cattle, and fowls the chief necessity is to seek fine qualities in the stallions, &c., while the condition of the mothers is quite negligible. He disagrees with those who assert that the human offspring will be large or small, strong or weak, according to certain special conditions in which the mother exists or according to certain functions which relate exclusively to her, such as age, primiparity or multiparity, or the interval between her parturitions. Galton himself laid down as a principle that the selection must be made through father and mother and not through the mother alone. Professor La Torre accuses civilisation of having done much to pervert both natural and sexual selection, and matrimony of having become a social instead of a natural function for the conservation of a strong race, while free unions are not prolific. Civilisation, moreover, has brought in its train a series of new maladies calculated to weaken the progenitors and make them bad procreators, as has been recently shown by Professor Sanarelli in his lecture on hygiene at the University of Rome. Professor La Torre showed in 1888 that the development and weight of the fœtus at term varied according as the father was more or less strong and large or weak and puny, and he disagrees with Pinard, who, in his work on "Puericultura Intrauterina," attempts to prove that the fœtus can be influenced by certain conditions of rest and feeding applied to the mother. Further, it is a matter of every-day observation that mothers who are ill, tuberculous, debilitated, profoundly anæmic, or even half starved, bring into the world large and strong children, while, on the other hand, women of rich family and fine constitution, who rest most part of their pregnancy, and during the last months are so fed with highly nutritious food that they become mountains of fat, bring into being a small, weak, and puny fœtus, a veritable mouse from a mountain in labour. How can paternal influence in such cases be denied when father and child are alike as two peas? Professor Gini, basing his opinions on statistics, takes the opposite view, and in making a comparison between human and equine reproduction, lays stress on the facts that the former reproduces at all seasons of the year, and the latter at one period only; that animals in a state of nature reproduce as soon as the organism is ready, whereas in man, as a rule, there is a considerable interval between this epoch and that when he begins to reproduce effectively; and that the circumstances favourable to good fœtal development and to a lessened mortality are to be attributed to conception in relation to the seasons, the age of the parents, and the multiparity of the mothers. To attain this end he counsels that not less than two years should elapse between consecutive parturitions, that late marriages should be avoided, since the younger the parents, and especially the mother, the greater will be the vital resistance and the better the physical and intellectual character of the offspring, and that the systematic protection of weak and degenerate beings which prolongs life and permits reproduction should be discountenanced. To Professor La Torre the question is not so simple; there are other considerations. For example, if a woman between 22 and 25 years, handsome, strong, intelligent, and endowed with all the most desirable requisites for becoming a mother, marries a man equally young but syphilitic, alcoholic, or tuberculous, or a victim to lead or arsenic poisoning, the offspring will be weak, diseased, and unhealthy. The same will also happen if a combination of Apollo and Hercules marries a worker in arsenic, mercury, or phosphorus, or one who is syphilitic or alcoholic. The age and other conditions advocated by Professor Gini fall to the ground in such cases. In the study of eugenics not only figures and statistics have to be taken into account, but recourse must be had to biology and to the clinic in order to deal with such problems. There are two other factors concerned with the organic improvement or deterioration of man: great epidemics and great wars. In the great epidemics of the past the weak, diseased, and old were generally stricken, while a greater number of the strong and robust survived. Thus occurred a kind of natural selection, so that future generations were the product of more or less healthy persons, and this

repeated, almost pathological, selection gave rise in ever increasing degree to the birth of healthy individuals, so that a healthy and robust state of society was ultimately arrived at. Then wars occurred and the opposite result took place. Those who are slain in war are the young and robust, the healthy and strong; the weak, diseased, and old remain who are not taken in the conscription, and it is these who now will carry on the work of procreation. Hence it follows that the race of a country after war is necessarily in decadence. Will it be the sturdiness and youth of the women who remain that will constitute the most powerful factor in the improvement of the future nativity of children equally well developed and healthy? Professor La Torre fears not.

WE are in a position to state with authority that the accident to H.M. the King, as is sufficiently shown by the official bulletins, has resulted in severe shock, much bruising, and pain, but that there has been no more serious outcome of his dangerous mishap. There has been no evidence whatever of any visceral lesion or of any fracture; and although His Majesty is still confined to bed, this is necessitated solely by the muscular stiffness following the bruising.

IN addition to the war discussions announced last week as arranged for by the Section of Therapeutics and Pharmacology of the Royal Society of Medicine, the Section of Medicine is arranging to hold a discussion on Paratyphoid Fever on Nov. 9th, at 5 P.M., which will be opened by Sir Bertrand Dawson and Dr. G. Dreyer. The Section of Psychiatry, in conjunction with the Section of Neurology, has arranged for a special discussion to be held on Tuesday, Jan. 25th, at 8.30 P.M., on the Functional Neuroses caused by Shell Fire without Visible Sign of Injury.

AT the next meeting of the Medical Society of London, to be held at 11, Chandos-street, Cavendish-square, W., on Monday, Nov. 15th, at 8.30 P.M., a discussion on "Gunshot Wounds of the Head" will be introduced by Lieutenant-Colonel Percy Sargent, R.A.M.C., and Lieutenant-Colonel Gordon Holmes, R.A.M.C. Mr. L. B. Rawling and Dr. Wilfred Harris and others will take part in the discussion. Those who wish to contribute to the discussion are requested to send their names either to the honorary secretaries or to the registrar of the society.

Dr. Brian O'Brien, Medical Inspector of the Irish Local Government Board, whose illness we announced last week, succumbed on Friday Oct. 29th, to an attack of cerebro-spinal meningitis.

SOCIETY OF MEMBERS OF THE ROYAL COLLEGE OF SURGEONS OF ENGLAND.—At the annual general meeting of the Fellows and Members of the College, which will take place at the College, Lincoln's Inn-fields, W.C., on Thursday, Nov. 18th, at 3 P.M., a resolution will be moved affirming "the desirability of admitting Members to direct representation on the Council of the College, which as now constituted only represents those Members who also hold the Fellowship; and that it does so in order that the constitution of the Council of the Royal College of Surgeons of England shall be in keeping with modern ideas of true representation." A further resolution is set down requesting the President of the College to explain the views of the Council in regard to the representation of Members on the Council of the College.

EXPERIENCES IN SERBIA, 1914-15.[1]

BY J. T. J. MORRISON, M.A. CANTAB., M.SC. BIRM., F.R.C.S. ENG.,

MAJOR, R.A.M.C.; SENIOR SURGEON TO THE QUEEN'S HOSPITAL, BIRMINGHAM; PROFESSOR OF FORENSIC MEDICINE IN THE UNIVERSITY OF BIRMINGHAM.

A British Hospital Unit.

A FEW weeks after the declaration of war I accepted an invitation from the authorities of the Order of St. John of Jerusalem in England to take charge of their proposed Serbian hospital expedition. While our plans were maturing it transpired that the recently founded Serbian Relief Fund contemplated a similar mission; and the unwisdom of overlapping being obvious to all concerned, negotiations led to the formation of a combined unit under the joint auspices of both bodies. It was not to be supposed that an ideal scheme for the purpose in hand would be produced within the available limits of time and resources. A coat must be cut according to the cloth, and adapting ourselves to the situation we proceeded to enrol a composite party of fifty, comprising a medical staff, dressers, nurses, orderlies, and wardmaids. As the Serbian Relief Committee found most of the funds they appointed Lady Paget as superintendent and the Hon. R. F. C. Chichester as secretary. The direction of the hospital was assigned to me as surgeon-in-chief, and an old friend, Mr. J. W. Wiles, lecturer on English in Belgrade University, was attached to me as secretary-interpreter. Seven medical men and four dressers were appointed, but within a day or two of sailing three of the doctors found themselves unable to fulfil their intention; the qualified staff was thus reduced to two surgeons, a physician-radiographer, and a physician-anæsthetist. This number allowed no margin for wastage, but the risk had to be incurred because it was too late to fill the gaps or postpone the journey. There were 18 nurses, including the matron, theatre sister, and dispenser. The 14 orderlies were all volunteers, several were graduates, and 5 were medical students. One gentleman contributed his motor-car converted into an ambulance, and varied his hospital duties by acting as chauffeur. Five untrained ladies were voluntary wardmaids. We also included a man-cook who spoke Serbian.

The term of appointment was three months, extended later to five months. No formal regulations were prescribed for the party, who were for the most part strangers drawn from all quarters. Difficulties, domestic and external, inseparable from such an enterprise cropped up, and mistakes were made; these afforded scope for forbearance and some measure of give-and-take, and were surmounted by keeping steadily in view the common purpose. We celebrated the close of the term with a dinner and polyglot speeches. Some elation was felt on winding up so pleasantly after all our vicissitudes and passing on to the succeeding unit a hospital with an established reputation to its credit.

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[1] During the interval between the writing and publication of Major Morrison's experiences in Serbia, the kaleidoscopic picture in the Balkans has again changed, the "marauding bands of Bulgarians" have become an invading army, and "Austrian prisoners" have given place to armed troops. Serbia is in the throes of a more "formidable campaign" than the author then dreamed of. Uskub and all the places where hospital work was being done, with the exception of Nish and possibly Ujitsé, are stated now to be in the hands of the enemy, and we earnestly trust that the Scottish Women's and other British missions have been able to withdraw in safety.—ED. L.

In addition to the enrolment of members there was the question of equipment. The unit was bound for an impoverished country at war, and our aim was to instal and maintain a service of 500 beds for three months. This raised a crop of problems, and the task of compiling detailed lists of instruments, drugs, dressings, and multifarious material required a good deal of consideration. Moreover, it was no light matter to assemble 120 tons of stores, given and purchased, ranging from a water-tank to pill-boxes, and sufficient in bulk and variety to stock an emporium. The satisfactory sequel was that the unit proved to be substantially self-contained.

To Skoplje and the Third Reserve Hospital.

We sailed on Oct. 29th, accommodation being provided on a British transport, thanks to the benevolence of the Admiralty. Our P. and O. boat was one of ten troopships bound for Egypt and India, with an escort of British and French cruisers and destroyers as far as Gibraltar. We transhipped at Malta and at Syracuse without mishap, called at the Piræus, and on Nov. 15th landed at Salonika. Our destination was Uskub, or, to give the town her revived ancient name, Skoplje. The railway journey promised to be interesting because marauding bands of Bulgarians, the so-called comitadjis, were disturbing the peace near the Greco-Serbian frontier and had recently blown up two bridges spanning the Vardar. However, nothing untoward happened, and we duly arrived on Nov. 17th.

Skoplje is the chief town in the Macedonian part of Serbia; a former capital of Greater Serbia in the Middle Ages, it was regained by conquest in 1912. The normal population of 35,000, with a large admixture of Turks and Albanians, has been increased by refugees, and its position gives it strategic and commercial importance. The unit had the unexpected honour of a civic reception by the commanding officer, General Popovitch, the Mayor, the Bishop of Skoplje, and the British Consul. The next day, having been shown alternative sites, we selected the Serbian gymnasium or high school, and here our hospital, known as the Third Reserve Bolnitza, became installed. (See Fig. 1.) The premises occupied three sides of a large quadrangle, the fourth side of which was a wall flanked by a strip of garden. The main block facing the entrance gate was a substantial two-storeyed building with a roomy central stairway of stone. The corridors on each side were separated from the stairway by a wide airshaft reaching from basement to roof, and provided with large windows admitting light and air to the interior. Halfway up the stairs a landing gave access to the recreation hall, which became our messroom by day and a drying laundry by night; it was fitted with a stage, which we used as a granary for our many bags of rice, and a gallery, in and under which was stacked school furniture. Opposite the main block was one wing of an L-shaped pavilion, whose other wing extended along the third side of the quadrangle. Near the fourth side was a detached playroom, which we turned into an isolation ward; and in the background were kitchens, latrines, and a woodstack. There was also a laundry beneath the messroom. The buildings were of recent construction, indeed not quite finished, and contained over 20 rooms with ample window space and dry walls. Lighting throughout was by oil lamps, and warming by slow-combustion stoves fed with wood.

Hospital Provision in Serbia.

To find such commodious premises available for our design was a cause of congratulation, and all the more because, in default of hospitals, structures so unsuitable as old Turkish barracks, insanitary factories, and stables were in use in the chief towns as shelters for the sick and wounded. Serbia was terribly tried when we arrived. The army was in retreat after the battle of Shabatz, and the enemy were devastating the fertile region of the north-west. Drained of men and treasure by three consecutive wars within the space of three years, the country was in the throes of the most formidable campaign of all, and her residue of resources was utterly unequal to the demand of providing adequately for the unending trainloads of wounded conveyed from the front. It is also to be observed that the nation, young in one sense, though with an ancient history and great traditions, had only just awakened from the dormancy of 500 years of Turkish domination which found and left her mediæval. Adjustment to modern standards of civilisation needed time and the chance of peaceful progress; whereas Serbia's brief period of autonomy has been darkened and impeded by dynastic tragedies, wars, and the haunting fear of Austrian spoliation. Once these extenuating facts are realised, the critic of Serbian hospital conditions, which are repugnant to Western ideas and admittedly capable of betterment, will perceive the justice of making ample allowances and mingling these with his displeasure.

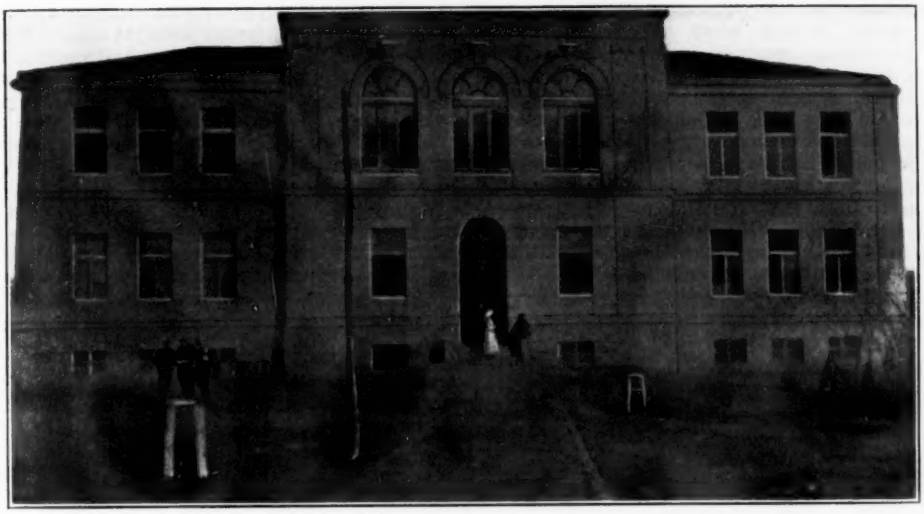
The gymnasium was already occupied by the Serbs as a hospital of 400 beds. The day after our acceptance of the premises all the patients were transferred elsewhere, with the exception of a few who were too ill to be removed.

Installing a British Hospital.

Then followed days of strenuous exertion to transform empty and very dirty buildings into the semblance of a methodically planned hospital of 280 beds. Hundreds of bales containing our equipment were dumped down from bullock-carts, and the contents sorted and taken to the several departments and store-rooms. The orderlies did the lion's share of this work. We also had the labour of 30 Austrian prisoners who were told off for any service we required, and quartered at the back of the hospital. Indoors floors and iron bedsteads were scrubbed, walls and windows cleaned, and the wards furnished with the usual requisites. A coat of distemper would have freshened the walls, given implements and materials; we lacked both, and experience of Oriental inertia soon taught us to depend to the utmost on our own resources, and beyond that limit to go without. A carpenter's shop was fitted up, for we had a full kit of tools, and cupboards and tables were improvised out of packing-cases. In four days order was so far evolved from chaos that we were prepared to admit over 100 patients.

Concurrently with the other preparations the operating theatre, X ray department, and dispensary were got into working order. The theatre was a good-sized room in the pavilion; it had three windows, a cemented floor, and, after some weeks' vexatious delay, a service pipe connected with the main water-supply. The Ewart boilers we took out kept us well supplied with hot water; and a powerful oil-pressure lamp procured at Malta gave excellent light for operations at night.

FIG. 1.



Third Reserve Bolnitza Hospital, Uskub (Skoplje): the main block.

The sleeping quarters of the staff were distributed in the neighbourhood. Several were in furnished lodgings; my three colleagues had a room apiece in the hospital; the nurses occupied a small school near by; the orderlies another school; and the four dressers, the interpreter, and myself were accommodated in a villa courteously placed at my disposal by the Italian Consul.

Mentality of Eastern Officials.

The first contingent of patients was due, according to official notice, on Nov. 22nd; that day we received a varied notice to be ready on the evening of the 24th, which was upset by a third notice fixing 1 A.M. on the 24th. The actual time of their arrival was 7 A.M. on that date. These discrepancies were, of course, attributable to the military situation and the consequent confusion of the entire railway system. The delay was advantageous to us and the cause well understood. But no such simple and valid explanation can apply to the thousand and one instances of delay we were destined to encounter in other directions. Day after day we were held up by unfulfilled promises and a policy of drift affecting matters of capital importance, to say nothing of small vexations in regard to odds and ends of work to be done or material to be supplied. The characteristic mental attitude of the native official in Macedonia is the product of centuries of Ottoman influence, and he himself belongs as yet to the East rather than the West. That attitude finds expression in three

FIG. 2.

Interior of a ward at the hospital.

words, which were constantly and unforgettably dinned into our ears—*sutra* (to-morrow), *polaka* (go slowly), and *némojé* (impossible). Entrenched in these formulas and what they connote the officials not seldom strained our patience to the verge. If those who offer personal service in the Balkans would remember the age-long system in which officials have been reared, and which colours their whole outlook of life, they would be forearmed against disappointments. Another point worth noting is the fewness of educated men trained to bear responsibility. A nation of peasant proprietors, intensely democratic, with no aristocracy and no titled persons beyond the Royal Family, is not likely to produce numerous men of marked capacity.

carried to a peasant's bullock-cart in which he was jolted over rough tracks, with occasional halts, for 10 to 20 hours; and after a variable interval a final 24 hours' railway journey brought him to Skoplje.

The first day's record of the dressers, nurses, orderlies, and wardmaids cannot be overpraised; and by that day's work alone the mission justified its existence. In less than four hours all those 180 wounded were fed, stripped, washed, shorn, and reclad; treated surgically on first-aid principles, and put to bed.

Within the next few days the hospital was full, and so remained for several months. Of the earlier patients five soon developed tetanus, which ran a rapidly fatal course; these were treated with serum

FIG. 3.

Group of patients and others at the villa.

Summary of Hospital Work.

The first batch of wounded numbered 180. Their plight was deplorable, and one's mind and emotions were painfully stirred, while the eye, the ear, and the nostril were offended. Wearing their peasants' garb (for there was a shortage of uniforms as of all else), muddy and blood-stained, with shirts and bodies long unwashed and swarming with lice; a large proportion with septic compound fractures and suppurating wounds, many with gangrenous limbs, and all half-famished and chilled in spite of fever—this groaning throng of mutilated men had surely sounded the depths of human wretchedness. Their wounds had been inflicted 10 to 30 days previously, and had received little or no surgical attention. In a large number of cases of compound fracture the only treatment had been to apply starch bandages, with deadly consequences to the encased limbs. Some of the patients were also suffering from recurrent fever, typhoid, or dysentery. The horrors of that morning's scene were the resultant of several factors—the woeful undermanning of the Serbian Army Medical Corps, the dearth of hospital stores, and the difficulties of transport. It was not uncommon to hear that a wounded man remained where he fell for 24 hours or more; he was then and chloretone; carbolic acid was also tried in three cases, and magnesium sulphate intraspinally in one. No instance of bayonet wound came under my notice, all the wounds being due to firearms. In the early period the demands on the two surgeons were so heavy that the day's work was not always finished by midnight. Before long our two medical colleagues relieved the strain by undertaking to supervise several wards. For the operations, some 500 in number, Mr. W. M. Eaton and I were responsible to the middle of February, and from then to the end of March they were mostly performed by Mr. E. F. Eliot with my occasional help. The operations were those common to all military hospitals in war time, such as amputations, removal of bullets and other foreign bodies, ligation of wounded arteries, drainage of compound fractures, drainage of joints and other cavities, excision of burst globes, a few bone-platings and trephinings, an occasional bowel resection, and so forth. One arduous operation I am not likely to forget was ligation of the gluteal artery for the cure of a large gluteal aneurysm. I saw no case of acute appendicitis in Serbia, though during the halt at Malta I operated on a patient under spinal anæsthesia at the request of Professor Cassar, surgeon to the Civil Hospital.

The total number of in-patients was approximately 700, and would have been greater but for the fact that subsequent to the rout of the Austrians admissions became fewer, and it was possible to retain patients longer. Besides the in-patients some hundreds of out-patients were treated, partly by the staff, but mostly by a Serbian doctor, my opinion being asked from time to time. The number of deaths from all causes was 65. Two wards were reserved for officers, all of whom recovered. They are warm-hearted, likeable men, possessing in a marked degree the qualities of disposition which have led a writer to describe the Serbians, and as I think aptly, as the "Irish of the Balkans." During my later journeys in Serbia I had the pleasure of meeting many of these former patients who had been returned fit for war service.

Ill-health of the Staff.

The working capacity of the unit was continuously and seriously reduced by an excessive rate of sickness. The strain of long hours in imperfectly ventilated wards full of septic cases told its tale, and infectious diseases were an added cause of disability. So many nurses were on the sick list that there were seldom more than eight available for day duty in the eighteeen wards. The saddest event in our journal was the death of Sister Clark on Christmas Day; she succumbed to a fever, presumably scarlet fever, supervening on acute tonsillitis. Two orderlies and a wardmaid were invalided home after scarlet fever, and there were two other suspected cases. Anomalous febrile attacks were common, besides several cases of relapsing fever. Septic throats were always with us, and in one suspicious case it was thought prudent to treat with antidiphtheritic serum. Five members of the unit had typhus, and two others doubtfully. Revaccination and inoculation against typhoid were required of all. There was no case of small-pox, and up to the date of my return at the end of April there had been no case of typhoid, but I have since heard, with deep regret, of Mr. Chichester's death from this cause at Nish.

Local Helpers.

Much appreciated help was given by several ladies, Serbian and Russian, and by an Orthodox priest. In particular I ought to mention the two daughters of a former Premier of Serbia, M. Svet-Nikolaijevitch, who left their home in Pozarevatz to lodge in Skoplje and work in the Third Reserve Hospital. They retired with the first unit, but continued their help at the small hospital carried on through April at my quarters. (When the unit returned on April 1st I was detained by the illness of Mr. Wiles, who was down with typhus. As several rooms in the villa were vacant, I received a few patients by request of the authorities who provided all needed supplies.) Both the Misses Svet-Nikolaijevitch spoke English; they were thus interpreters as well as devoted nurses, and in both respects their assistance was invaluable.

Capable ward attendants were recruited from the Austrian prisoners, among whom were men of superior intelligence, and some spoke English. They did their duty cheerfully and well, and won the regard of the staff and the Serbians alike. The work would have lost in efficiency but for these men, for the only substitutes were the native *bolnitchas*, a poor type of peasant mentally or physically unfit for the army. That it was hard to suffer *bolnitchas* gladly will be evident from a single incident, by no means the worst that could be cited. One who was set to mop a floor with izal was caught in the act of replenishing the bucket with the contents of a bed-utensil. Austrians were also the wood-sawyers for fuel. The sawdust was sprinkled freely on the floors of latrines and other damp places, and proved an excellent absorbent; for this wrinkle I am indebted to a paper published last year by Professor Saundby.[2]

Other Foreign Missions to Serbia.

The unit whose story I have outlined was the first British hospital party to Serbia in connexion with the war. Other parties followed at intervals and some groups returned, the net result being that there were over 300 British workers, men and women, in the country at the end of March. The haphazard way of sending independent units on the same errand is open to serious objection, and it would be well if all were coördinated and controlled by a common head-centre.

America was strongly represented, and other countries furnishing helpers were Russia and Greece. I had opportunities of observing the zeal and self-sacrifice displayed by the various foreign missions, and can only regret that too often the impossible was attempted, and with tragical results, for the death toll was heavy. I know of more than one instance where a depleted party was compelled to abandon the hopeless struggle against overwhelming odds. In Skoplje a British unit was installed in a large factory accommodating over 1000 medical and surgical patients. Besides their inherent unsuitability the premises were detestably insanitary and the floor space overcrowded to its utmost capacity. The head of the unit expostulated and entreated, but the authorities pleaded inability to effect improvements or shelter some of the patients elsewhere. On the ground floor I saw 250 men lying on sacks of straw packed closely together, covered only by their ragged uniform under a blanket. Gangrenous limbs and septic compound fractures were common, the stench being overpowering; yet every window was closely shut. This hospital was credited with being the starting point of the epidemic of typhus which ravaged Skoplje; be that as it may, the disease secured a firm hold on each of the four floors before it was recognised. Of the 16 members of the British staff two doctors and five orderlies went down with typhus, and two of the latter died; other victims were a Russian doctor (Miss Kadisch) and a medical Austrian prisoner, and of these two the Austrian died. The remnant of the unit, nearly all of whom were unfit for work, was withdrawn, and Miss Kadisch, who was still at work, remained in residence single-handed.

Dr. Esther Kadisch.

The splendid story of this courageous member of our profession deserves far more fitting record than the fragmentary notes here set down. When a girl in her teens she visited relatives in Dublin and gained a modern languages scholarship in Trinity College. Her medical course, which began in Paris (where she concurrently passed examinations in French law), was continued in Russia, Germany, and England, and completed by graduation in a Russian and in a German university. I first met Miss Kadisch in 1913. when she was a student at the Queen's Hospital, Birmingham, and, strangely enough, next met her in Skoplje as a member of the staff of the Serbian hospital to

[2] THE LANCET, Sept. 19th, 1914, p. 761.

which my unit succeeded. I learned that on the outbreak of war she had been arrested in Berlin as an alien enemy and detained in a cell on prison fare for several days until released by the intervention of a socialist member of the Reichstag. She then became associated with a Russian Grand Duke in collecting a party of refugees, whom she piloted across to Finland and thence to Petrograd. A short visit to her home in Riga was followed by an adventurous journey to Serbia, by way of Bucharest and the Danube (her boat being under Austrian fire), to Belgrade. At the close of her two months' work in the Gymnasium Hospital, Dr. Kadisch joined the staff of the British unit which presently became installed in the factory, and proved an invaluable colleague as a doctor and interpreter. She was distressed by the retirement of the unit, but nothing would induce her to vacate the post. Toiling night and day in a desperate effort to rescue a few among the forlorn crowd of miserables dying from typhus and septicæmia, this accomplished and heroic lady nearly gave her life as the price of her devotion. The only helpers were untrained native women and Austrian prisoners. It was my privilege on her recovery to introduce her to the Prime Minister, M. Pachitch, and to witness His Excellency's emotion in thanking her for the noble services rendered to his people. Dr. Kadisch's departure brought a grateful concourse of Serbians and Austrians to the station, including some who were indebted to her for their life. I had the pleasure of hearing of her safe arrival at Riga by telegram from her father, and I have since heard she was working at Petrograd.

Visits to Serbian Towns.

Towards the end of January I went on the sick list with a fever associated with petechiæ to which those who saw me declined to affix a label beyond hinting at "Uskubitis" and typhus. Although a mild infection, it caused a great leakage of muscular energy which was not quickly regained. When convalescent I paid a visit to Nish, and was requested by the Prime Minister to take part in the work of the Typhus Commission appointed by the Skupshtina to cope with the epidemic, then rising to its height. In pursuance of my functions I inspected hospitals in Nish, Belgrade, Kragujevatz, Vrnjatchka Banja, and Ujitsé.

Nish, with its normal population of 25,000 increased by refugees to 100,000, was full of hospitals crowded with thousands of sick and wounded, typhus being especially prevalent. Two hospitals were respectively under the Russian flag and the Stars and Stripes.

In Belgrade I went over the modern military hospital, where the labours of Dr. Ryan and his American mission have earned the undying gratitude of Serbia. The building has many up-to-date advantages and is far and away the finest hospital in the country. The records of Dr. Ryan's firmness and achievements excited one's envy and admiration.

Railway journeys off the main line were a penance; the trains travelled generally at night and were crowded; and to add to these discomforts the weather was bitterly cold. Travelling from Belgrade to Kragujevatz I was fortunate in being allowed to sleep in a valise on the floor of a compartment instead of in the corridors. Kragujevatz is the main headquarters of the army and famous for its arsenal. In this town I inspected the hospital directed by Dr. Grace Soltau, of the Scottish Women's Foreign Mission. It was well equipped and well managed, and had achieved excellent results. No exception to the rule last winter, the staff was weakened by much sickness, and there were several deaths.

Vrnjatchka Banja or Vrntsé is an inland spa not easy of access. In this salubrious town the British units directed by Mr. James Berry, F.R.C.S., and Captain E. Bennett, Commissioner of the British Red Cross Society, have overcome all obstacles and established model hospitals. A great asset of the town is the perennial hot spring; this was utilised for bathing patients at whatever hour they might arrive.

Madame Yankovitch.

Visiting one obscure hospital in Vrntsé I had the honour of becoming acquainted with a Slav lady whose quiet deeds of heroism far from the public gaze were the index of a high type of character. Madame Yankovitch is a Montenegrin widow; she had studied medicine in Trieste and Geneva, but her course was interrupted by illness. In July, 1914, she took charge of the fever hospital, consisting of three wooden huts raised on piles. The nominal provision for 60 patients was increased by the universal Serbian device of putting three patients into two beds in contact. In this hospital, for the second time in Serbia, I saw a woman warded with men, no other arrangement being available. Madame's bed occupied a small curtained-off space at the end of one ward. In these forbidding circumstances, with no assistance beyond what was forthcoming from convalescent patients or Austrian prisoners, Madame Yankovitch had laboured incessantly for eight months as physician, surgeon, nurse, and administrator. She was subsequently stricken with typhus, but happily recovered.

Plight of Ujitsé, March 9th.

Ujitsé is a primitive Serbian town, the terminus of a narrow-gauge branch line projecting towards the Montenegrin frontier. It is a garrison town of strategic importance, and contains several barracks. During the invasion it was occupied by Austrian troops, but they left it practically undamaged. The town was in March 9th last greatly overcrowded with refugees, many of whom were almost destitute. My visit was made in unfavourable circumstances. I arrived at 11.50 P.M., after an 11 hours' journey, by the only train in the day from Vrntsé; the temperature was below zero (Cent.); there was a continuous snowfall, and the accommodation was a small dirty room, infested with rats, opening out of the backyard of an inn. This room I shared with my interpreter, Mr. Wiles, who, unfortunately, contracted typhus fever during our visit. The number of sick in Ujitsé was about 1000, a large proportion being cases of typhus, typhoid, recurrent fever, small-pox, and scarlet fever. (In one house in the town I saw six cases of scarlet fever.) Two-thirds of the patients were Austrian prisoners.

The chief hospital is the infantry barracks. The scenes I met with here cannot be described in measured terms; a few sentences must suffice. Owing to the lack of workers and material the corridors, wards, stairways, and latrines were shockingly dirty and insanitary. Over 700 patients were crammed into rooms containing about 500 beds; many were lying on the bare floor; others were on sacks of straw; others on raised wooden platforms in series of six men side by side; and the remainder were on bedsteads. Most of the patients

had no covering but the clothes they had worn for months. In the entrance hall was a crowd of over 100 men seeking admission. Many of these were plainly near death, and I saw a number of patients here and in the wards actually moribund.

The Austrian prisoners were interned in the artillery barracks, and the resources at the disposal of the authorities (other than food-supply) were grievously insufficient to make due provision for the health, far less for the comfort, of these unfortunate men.

To cope with the demands—medical, administrative, and clerical—Lieutenant-Colonel Velitsarevitch was the only military doctor. When the war began there were 19 Serbian practitioners available for duty at Ujitsé. Of these, 3 have died, 15 are ill (7 with typhus, 6 with typhoid), and Lieutenant-Colonel Velitsarevitch alone remained on duty. (I visited three of the doctors suffering from typhus; happily they all bid fair to recover.) Lieutenant-Colonel Velitsarevitch, who is obviously much liked and commands the confidence of all those under his charge, has made practical suggestions to the headquarters staff for the betterment of the situation. So far these ideas have not been acted upon, no doubt because of Serbia's poverty in capable men, money, and material.

I add here a note on the shortage of Serbian army doctors. On the declaration of war the medical staff numbered 300; before the end of April no less than 120 of these had died, all of disease with the exception of one who was killed in action. I obtained these figures on high authority at Nish.

Medical Personnel of the Unit.

My personal thanks are due to every member of the unit. It was a happy chance that associated me with such competent surgeons and staunch comrades as Mr. Eaton, director of the Bulawayo Hospital, who spent his furlough from near the tropics in strenuous work for the Serbians through a Balkan winter; and Mr. Eliot, who joined the staff when Mr. Eaton returned in February, and is now on active service as a Major in the Royal Army Medical Corps at Malta. The loyal friendship and unfailing help of these gentlemen are entwined in all my memories of the work in Skoplje.

Dr. W. B. Knobel and Dr. T. G. Maitland rendered valuable services in their domain, and voluntarily came to the rescue when the surgical demands were excessive. In February, when typhus was at flood-tide, they devoted themselves with great success to the task of coping with the epidemic.

Dr. R. O. Moon arrived in March. Besides adding distinction to the staff, he strengthened our hands most acceptably by his good counsel and firm support. He undertook the dangerous post of superintendent of the fever hospital, and both he and Dr. Knobel passed through perilous attacks of typhus.

My four dressers—Mr. E. B. Alabaster, Mr. H. W. Hall, Mr. Frank Newey, and Mr. Cloudesley Smith—were indispensable, for on them fell the brunt of dressing noisome wounds all day long. Mr. Newey was my house surgeon and right-hand man. On resuming his studies in Birmingham, after six months' absence, he made up the leeway, and astonished himself and all others, except one person, by gaining the first place and scholarship in the Fourth M.B. Examination. Mr. Hall is now a surgeon-probationer in the Royal Navy. These gentlemen were reinforced by the five medical students—Mr. R. W. Jackson, Mr. Ian M. Rattray, Mr. H. F. Squire, Mr. S. C. Swinburne, and Mr. Carlton Williams—who went out as orderlies, and later became dressers with great benefit to the efficiency of the mission.

Serbian Appreciation.

The gratitude of Serbians of all classes to the unit was unbounded. The Crown Prince, Prince George, and Prince and Princess Alexis visited the hospital and showed a most kindly interest in the patients and in every department of the work. On the night before the unit departed the members were invited by the local authorities to a "banquet of honour." The proceedings were enlivened by the music of a military band, and speeches were made beyond our deserving in French and Serbian. The Prime Minister wrote a gracious and generous letter expressing his personal regard and appreciation. Every man in the unit received a commission in the Serbian Army, the rank varying from colonel to lieutenant, and other distinctions were awarded by King Peter and the Serbian Red Cross Society. But over and above all these gratifying tokens of esteem we cherish the sincere affection of brave and gallant men whom it was our privilege to befriend, and whose recovery was a reward beyond price.

Birmingham.

THE SPA DEVELOPMENT SCHEME AT CHELTENHAM.

A YEAR ago we brought before our readers in a series of articles[1] the claims of our home health resorts, and began by setting out the necessary qualifications of success, which are three. First, there must be natural waters of medicinal value; secondly, the spa must have natural beauties of situation; and thirdly, there must be provided a relaxation of medical routine in the shape of healthy diversions of a first-rate order. Cheltenham was then the first British spa to be described, and the recent celebration of the anniversary of its development scheme affords an opportunity for observing how far it is qualifying for success. No question arises in regard to the beauty of the situation, which is a matter of common knowledge, and justifying the epithet of Garden Town. There is a choice of four waters, each containing a quantity of salts with definite therapeutic action. Nature has provided these things for Cheltenham and the hand of man has not marred them. It remains to be seen how far the Cheltenham authorities have risen to the occasion in bringing these natural advantages before those who can make use of them, and in adding thereto the amenities of social arrangements.

The celebration, which took place on Oct. 29th, included a public meeting at the town-hall, with Lord ST. ALDWYN in the chair, supported by a representative and influential group of local worthies, including the mayor, the high sheriff, the principals of the colleges, and many members of the medical profession, Sir James Goodhart amongst them.

The CHAIRMAN, in his opening address, after dwelling on the history of the spa, stated that 8000 visitors had come to drink the Cheltenham waters during the past season, and he saw no reason why, with a little energy and enterprise on the part of those

[1] The Claims of British Spas: THE LANCET, Sept. 26th, Oct. 3rd, 17th, and 24th, Nov. 7th, and Dec. 5th, 1914, and Jan. 16th, 1915.

connected with it, Cheltenham should not again take up the position which it occupied in 1820. It retained every advantage which it then enjoyed, and the climate was suitable—which the climate of no German watering place ever was—for a winter as well as a summer season. Splendid facilities for education existed for both boys and girls. It was not thinkable that there was any impediment in the English temperament to the scientific study of the business of organising the spa for the benefit of patients.

Mr. Alderman MARGRETT, Deputy Mayor, moved—

That this meeting hails with satisfaction the success of the recent development of Cheltenham Spa, and is of the opinion that the merits of its waters justify a continuance of the efforts which are being employed to make their medical value more widely known,

a motion which was carried with acclaim.

Sir JAMES GOODHART said that Cheltenham always seemed to him to possess the essentials of an ideal spa and yet to have been very insufficiently utilised. The uncertain English climate was, of course, one disability, but the hotel accommodation had been the serious drawback, and he had no doubt that, if situated on the continent, Cheltenham would long ago have become a second Carlsbad.

A paper by Dr. ARTHUR LATHAM, who was prevented from attending, was then read by Mr. G. A. CARDEW. Dr. Latham pointed out that in order to form a correct opinion of the Cheltenham waters properly sifted clinical records of cases were required; but he assured Cheltenham great prosperity if business-like development of its opportunities occurred, inasmuch as the city possessed all the natural requirements for an ideal spa.

During the day the installation at the Montpellier Baths was largely visited by local residents, to whom 800 invitations had been issued by the Traders' Association.

A MONTHLY RECORD OF ATMOSPHERIC POLLUTION.

COMMITTEE FOR THE INVESTIGATION OF ATMOSPHERIC POLLUTION:

Summary of Reports for Month ending June 30th, 1915.

Place.	Rainfall in millimetres.	Metric tons of deposit per square kilometre during month.								
		Insoluble matter.			Soluble matter.		Total solids.	Included in soluble matter.		
		Tar.	Carbonaceous other than tar.	Ash.	Loss on ignition.	Ash.		Sulphate as (SO_4).	Chlorine (Cl).	Ammonia (NH_3).
ENGLAND—										
Birmingham, Central	18	0·23	2·08	6·29	0·80	2·30	11·70	1·20	0·40	0·06
,, Aston*	—	—	—	—	—	—	—	—	—	—
,, S.W.	37	0·04	0·91	2·08	0·53	2·30	5·80	1·30	0·10	0·04
Bolton	68	0·06	1·23	4·22	2·68	5·10	13·29	3·29	0·72	0·06
Exeter	60	0·02	0·96	2·74	0·62	3·22	7·56	1·50	0·30	0·05
Kingston-upon-Hull	7	0·09	3·72	4·00	0·99	1·90	10·70	1·06	0·27	0·02
Leicester	79	0·03	4·07	3·04	2·54	3·49	13·17	2·16	0·55	0·15
Liverpool	26	0·09	5·19	13·32	1·83	3·19	23·62	1·92	0·41	0·13
London—										
Meteorological Office	20	0·10	1·85	1·78	0·80	1·60	6·13	0·90	0·46	0·05
Embankment Gardens	13	0·18	4·20	6·22	0·64	1·83	13.06	1·18	0·37	0·08
Finsbury Park	30	0·25	3·31	7·32	0·95	2·37	14·21	1·16	0·42	0·04
Ravenscourt Park	12	0·12	1·78	5·85	0·60	3·00	11·34	1·39	0·27	0·03
Southwark Park	19	0·03	2·18	6·84	2·00	6·67	17·72	5·55	0·46	0·08
Wandsworth Common	21	0·02	0·91	4·62	0·59	4·17	10·31	1·71	0·49	0·06
Victoria Park	17	0·03	0·96	4·74	0·73	2·89	9·34	1·66	0·32	0·05
Golden Lane	13	0·05	3·55	6·35	1·12	2·60	13·67	1·81	0·37	0·13
Malvern	36	0·00	0·30	0·47	0·41	0·69	1·87	0·41	0·10	0·01
Manchester—										
Ancoats Hospital	48	0·11	3·07	11·54	1·22	4·89	20·83	2·65	0·42	0·08
Bowdon	47	0·01	0·52	1·91	0·59	3·76	6·79	1·35	0·20	0·04
Cheadle	54	0·49	1·46	3·43	0·89	2·26	8·53	1·35	2·37	0·26
Davyhulme	50	0·02	0·41	5·43	0·97	0·56	8·39	3·15	0·41	0·09
Fallowfield	62	0·05	1·36	4·19	1·51	5·13	12·24	2·39	0·30	0·03
Moss-side	63	0·10	1·19	4·80	1·01	3·92	11·02	2·48	0·51	0·07
Philips Park	55	0·07	1·50	5·85	2·16	4·34	13·92	2·19	0·59	0·06
Queen's Park	60	0·06	1·36	4·37	1·56	4·43	11·78	2·54	0·52	0·08
School of Technology	70	0·14	1·03	13·63	1·38	4·53	20·70	2·86	0·67	0·11
Whitefield	65	0·03	1·56	5·33	2·23	4·71	13·89	2·73	0·35	0·08
Newcastle-on-Tyne	14	0·09	3·95	12·50	1·95	4·93	23·40	2·30	0·54	0·17
Oldham	70	0·29	6·15	20·80	1·69	5·63	34·60	2·54	0·65	0·17
Sheffield—										
Attercliffe Burial Ground	28	0·10	3·45	8·51	2·11	3·32	17·49	1·48	1·33	0·06
Hillsborough Park	38	0·04	1·78	5·38	0·84	4·27	12·31	2·14	0·63	0·08
Meersbrook Park	46	0·06	1·60	5·28	1·10	3·66	11·70	2·48	0·62	0·08
Weston Park	38	0·06	1·84	5·89	1·36	3·18	12·32	2·22	0·69	0·07
York	13	0·05	1·04	3·50	0·93	1·09	6·61	0·68	0·20	0·06
SCOTLAND—										
Coatbridge	46	0·07	1·18	3·48	0·96	1·48	7·17	0.98	0·12	0·09
Greenock	40	0·11	3·00	5·76	1·15	2·01	12·02	1·25	0·10	0·10
Leith	35	0·06	0·77	2·25	1·41	2·26	6·75	0·87	0·19	0·09
Stirling†	—	—	—	—	—	—	—	—	—	—

* Results unreliable, owing to dust from paths being made near gauge. † No returns sent in.

"Tar" includes all matter insoluble in water but soluble in CS_2. "Carbonaceous" includes all combustible matter insoluble in water and in CS_2. "Insoluble ash" includes all earthy matter, fuel, ash, &c. One metric ton per sq. kilometre is equivalent to: (*a*) Approx. 9lb. per acre; (*b*) 2·56 English tons per sq. mile; (*c*) one gramme per sq. metre; (*d*) 1/1000 millimetre of rainfall.

The public health authorities concerned in the supervision of these examinations were as follows: Dr. J. Robertson, Medical Officer of Health of Birmingham; Dr. J. E. Gould, Medical Officer of Health of Bolton; Mr. H. Lloyd Parry, Town Clerk, Exeter; Mr. A. R. Tankard, Public Analyst, Kingston-upon-Hull; C. K. Millard, D Sc, Leicester; Dr. E. W. Hope, Medical Officer of Health of Liverpool; The Director of THE LANCET Laboratory, Meteorological Office, London; Mr. J. Ollis, Chief Officer, Public Control Department, London County Council, London; Dr. W. J. Howarth, Medical Officer of Health of London; Mr. W. Osborne Thorpe, Engineer, Urban District Council, Malvern; Mr. J. Warrington, Secretary, Air Pollution Advisory Board, Manchester; Dr. J. B. Wilkinson, Medical Officer of Health of Oldham; Dr. H. Kerr, Medical Officer of Health of Newcastle-on-Tyne; Professor W. P. Wynne, The University, Sheffield; Dr. E. M. Smith, Medical Officer of Health of York; Mr. A. G. Dutch, Sanitary Inspector, Coatbridge; Mr. J. Devine, Sanitary Inspector, Greenock; Mr. Thomas Bishop, Sanitary Inspector, Leith; and Mr. W. W. Kelso, Sanitary Inspector, Paisley.

The analytical work involved in these returns was undertaken respectively by J. F. Liverseege, F.I.C., Birmingham; Harry Hurst, B.Sc., F.I.C., Bolton; F. Southerden, B.Sc., F.I.C., Exeter; A. R. Tankard, F.I.C., Kingston-upon-Hull; S. F. Burford, Leicester; W. H. Roberts, M.Sc., F.I.C., Liverpool; S. A. Vasey, F.I.C., Director, THE LANCET Laboratory (London Meteorological Office collections); J. H. Coste, F.I.C. (Embankment Gardens, Finsbury Park, Ravenscourt Park, Southwark Park, Wandsworth Common, Victoria Park collections), London; F. L. Teed, D.Sc., Golden-lane, London, E.C.; C. C. Duncan, F.I.C., Malvern; E. Knecht, Ph.D., M.Sc., Manchester collections; J. J. Dunn, D.Sc., Newcastle-on-Tyne; Samuel Urmson, Oldham; Professor W. P. Wynne, Sheffield collections; S. H. Davies, M.Sc., York; Messrs. R. R. Tatlock and Thomson, Coatbridge; J. W. Biggart, F.I.C., Greenock; A. Scott Dodd, B.Sc., F.I.C., Leith and Paisley.

THE SERVICES.

ROYAL NAVY MEDICAL SERVICE.

THE undermentioned have been entered as Surgeons for temporary service in His Majesty's Fleet:—

Dated Oct. 26th: Robert Townly Bailey and William Hart Steel.

ARMY MEDICAL SERVICE.

Colonel Henry O. Trevor, on completion of four years' service in his rank, is retained on the Active List, under the provisions of Article 120, Royal Warrant for Pay and Promotion, and to be supernumerary (dated Oct. 26th).

ROYAL ARMY MEDICAL CORPS.

Major Francis S. Irvine to be temporary Lieutenant-Colonel whilst Commandant of the Training Establishment (dated Oct. 4th).

Surgeon-Captain George S. C. Hayes, Reserve of Officers, to be temporary Major whilst in command of a Field Ambulance (dated Oct. 9th).

Captain Robert E. Kelly, R.A.M.C. (T.F.), to be temporary Major (dated Oct. 29th).

Temporary Lieutenant Robert Tait McKenzie to be temporary Major (dated Oct. 30th).

The undermentioned to be temporary Captains:—

Dated Oct. 4th: Benjamin Holroyd Slater.

Dated Oct. 7th: George Davison Laing and Harold Upcott.

Dated Oct. 30th: Temporary Lieutenant Joseph Alan Longley.

The undermentioned temporary Lieutenants to be temporary Captains:—

Dated August 9th: Edwin J. Wyler.

Dated Sept. 9th: Nigel P. Boulton.

Dated Sept. 16th: Stanley P. Stoker, Oliver C. Link, and Ernest E. Holden.

Dated Sept. 17th: William C. Horton.

Dated Sept. 18th: James Wilson.

Dated Sept. 21st: William H. Sutcliffe, Roy W. Russell-Jones, and Trevor H. Wilkins.

Dated Sept. 22nd: Daniel J. Mulholland, Reginald B. Heygate, and Reginald C. Verley.

Dated Sept. 23rd: Percy Gully and George D'R. Carr.

Dated Sept. 26th: David H. Hadden.

The undermentioned temporary Honorary Lieutenants to be temporary Honorary Captains whilst serving with No. 1 British Red Cross (Duchess of Westminster's) Hospital:—Dated Oct. 15th: J. S. Burn, D. M. Stone, and J. Erlank.

Temporary Honorary Captain Walter Seymour Armstrong, from the Australian Voluntary Hospital, to be temporary Captain (dated Oct. 15th).

William Martin Flack is granted temporarily the honorary rank of Captain (dated Oct. 21st).

The appointment to a temporary Lieutenancy of Fraser B. Gurd is antedated to May 25th.

Temporary Lieutenant Ralph G. Dainty to relinquish his commission (dated Sept. 19th). Leslie H. Skene (dated Sept. 21st).

The undermentioned temporary Honorary Lieutenants to be temporary Lieutenants:—Dated Oct. 14th: Gervas Charles Wells-Cole, Gordon Doulton East, and Harold James Bower.

The undermentioned to be temporary Lieutenants:—

Dated June 24th: David Eardley Fenwick.

Dated July 5th: Donald Meek.

Dated Oct. 4th: Alfred Hamilton Rentoul, Francis Dugon, Reginald Prynne Marshall, Idwal Wynne Jones, Andrew Fergus Hewat, William Shipton, Thomas Woodman, Cecil John Marsh, Frederick Leonard Sessions, Oswald Pitt, and Ian Maclean Frazer.

Dated Oct. 5th: Alexander Murray Drennan, James Templeton, Alfred Darlow, Norman Macphail, Roger Michael Wright, and Robert Svensson.

Dated Oct. 6th: Henry Deedes Nutt MacKenzie.

Dated Oct. 7th: Gordon Stonehouse, Henry Richmond, Martin Turnbull, John Hyde Iles, William Landsborough, Hugh Barr, Thomas Burns Dakin, William Forsyth Gibb, Hugh Cecil Addison, James Huntley Legge, George MacKenzie Miller, Thomas Bolster Newman, Wilson Astin, William Elliot Randall Dimond, William Hardy Fleetwood, Harry Mewburn Brown, Esmond Tetley Willans, Lionel Page, David Thomas Price, Archibald Naismith, John Wilson Miller, George Clement Neilson, Ronald Dingwall Hodge, William Hamilton, Frederick Crampton Merrall, Andrew Muir, Thomas MacHardy, William Frank Lydstone Day, John Allan Robertson Wells, Robert Dick Buchanan, William Linnell Partridge, Thomas Hall Gandy, Henry Carson Smyth, and Robert Chichester McMillan.

Dated Oct. 8th: Sidney Smalbroke Depree.

Dated Oct. 10th: John Colley Pounden.

Dated Oct. 13th: John Arnold Jones, George Henderson, and Francis Joseph Morrin.

Dated Oct. 14th: Harold Douglas Wyatt, Alfred Clarence Norman, Francis Reinagle Barwell, Bernard Edward Augustine Batt, Coram LLewellyn Stuart James, Francis James Alphonsus Keane, Reginald Woolsey Stocks, Eber Caudwell, Robert Frew, Frederick Alexander Anderson, Herbert Mitchell, William Fothergill Wilson, William Lockhead Scott, Godfrey Bateman, and William Edward Coulson Musson.

Dated Oct. 15th: William Joseph Greehy.

Dated Oct. 18th: Walter Francis Moore.

The undermentioned to be temporary Honorary Lieutenants:—Dated Oct 18th: Eric Gordon Barker, George William Huggins, Francis Keene Marriott, and Gerald Evan Spicer.

Gerald Struan Marshall to be temporary Honorary Lieutenant (dated July 30th).

INDIAN MEDICAL SERVICE APPOINTMENTS.

The following have been appointed to the Indian Medical Service: I. D. Grant, M.B., Ch.B. Glasgow University; and A. Hunter Brown, M.B., Ch.B., Aberdeen University.

SPECIAL RESERVE OF OFFICERS.

Royal Army Medical Corps.

Lieutenant David Mackie to be Captain, with seniority next below J. Taylor.

TERRITORIAL FORCE.

Royal Army Medical Corps.

West Lancashire Field Ambulance: Major Creighton H. Lindsay to be temporary Lieutenant-Colonel.

West Riding Field Ambulance: Major James Mackinnon to be temporary Lieutenant-Colonel.

South-Western Mounted Brigade Field Ambulance: Lieutenant William A. Milner to be Captain.

Home Counties Field Ambulance: Lieutenant (temporary Captain) Charles Killick to be Captain. Lieutenant Horace T. N. Merrick to be Captain.

East Lancashire Field Ambulance: Lieutenants to be Captains: William L. Cockcroft and James Cowan.

London (City of London) General Hospital: Ernest Cranmer Hughes to be Captain, whose services will be available on mobilisation. Frederick Douglas Selmes Jackson to be Captain, whose services will be available on mobilisation.

Attached to Units other than Medical Units.—Lieutenant William D. Frew to be Captain.

TERRITORIAL FORCE RESERVE.

Royal Army Medical Corps.

Major Harry P. Berry, from Attached to Units other than Medical Units, to be Major.

VITAL STATISTICS.

HEALTH OF ENGLISH TOWNS.

IN the 96 largest English and Welsh towns with populations exceeding 50,000 persons at the last Census, 7337 births and 4810 deaths were registered during the week ended Saturday, Oct. 30th. The annual rate of mortality in these towns, which had been 14·9, 13·9, and 13·3 per 1000 in the three preceding weeks, rose in the week under notice to 13·8 per 1000 of their aggregate population estimated at 18,136,180 persons at the middle of last year. During the first four weeks of the current quarter the mean annual death-rate in these towns averaged 14·0, against a corresponding rate of 14·6 per 1000 in London. The annual death-rate last week ranged from 4·9 in Acton, 5·7 in Ilford, 7·0 in Wimbledon and in Leyton, 8·8 in Ealing and in Aberdare, and 9·0 in Willesden and Wallasey, to 18·3 in Gateshead, 18·5 in Stockton-on-Tees, 19·1 in Brighton, 19·9 in Burnley, and 20·2 in West Hartlepool.

The 4810 deaths from all causes were 194 in excess of the number in the previous week, and included 451 which were referred to the principal epidemic diseases, against numbers declining from 973 to 522 in the four preceding weeks. Of these 451 deaths, 255 resulted from infantile diarrhœal diseases, 73 from diphtheria, 37 from measles, 36 from whooping-cough, and 25 each from scarlet fever and enteric fever, but not one from small-pox. The mean annual death-rate from these diseases was equal to 1·3, or 0·2 per 1000 less than that recorded in the previous week. The deaths of infants (under 2 years) from diarrhœa and enteritis, which had declined from 808 to 364 in the four preceding weeks, further fell to 255, and included 65 in London, 24 in Liverpool, 13 in Manchester, 8 in Birmingham, and 7 each in Stoke-on-Trent and Gateshead. The deaths

referred to diphtheria, which had been 64, 61, and 50 in the three preceding weeks, rose to 73 last week, of which 18 were registered in London, 6 in Stoke-on-Trent, 4 in Portsmouth, and 3 each in Hastings, Manchester, Rochdale, and Leeds. The fatal cases of measles, which had been 24, 23, and 40 in the three preceding weeks, fell to 37; 5 deaths occurred in Nottingham, and 3 each in Birmingham and Salford. The deaths attributed to whooping-cough, which had declined from 48 to 31 in the four preceding weeks, rose to 36 last week, and included 7 in London, 5 in Birmingham, and 3 each in West Ham and Liverpool. The deaths referred to scarlet fever, which had been 31, 21, and 26 in the three preceding weeks, were 25 last week, of which 6 were registered in London and 2 each in Plymouth, Stockport, St. Helens, and Manchester. The fatal cases of enteric fever, which had been 13, 12, and 11 in the three preceding weeks, rose to 25, the highest number recorded in any week of this year, and included 8 in London and 2 each in Liverpool and Wigan.

The number of scarlet fever patients under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital, which had steadily increased from 2360 to 3110 in the nine preceding weeks, were again 3110 on Saturday last; 378 new cases were admitted during the week, against 468, 453, and 462 in the three preceding weeks. These hospitals also contained on Saturday last 1634 cases of diphtheria, 74 of measles, 50 of enteric fever, and 3 of whooping-cough, but not one of small-pox. The 1226 deaths from all causes in London were 29 in excess of the number in the previous week and corresponded to an annual death-rate of 14·2 per 1000. The deaths referred to diseases of the respiratory system, which had been 185, 169, and 188 in the three preceding weeks, rose to 216 in the week under notice, and were 19 above the number registered in the corresponding week of last year.

Of the 4810 deaths from all causes in the 96 towns, 205 resulted from different forms of violence and 371 were the subject of coroners' inquests, while 1500 occurred in public institutions. The causes of 52, or 1·1 per cent., of the total deaths were not certified either by a registered medical practitioner or by a coroner after inquest. All the causes of death were duly certified in Manchester, Leeds, Bristol, West Ham, Bradford, and in 65 other smaller towns. Of the 52 uncertified causes, 9 each were registered in Birmingham and Liverpool, 3 each in London and Gateshead, and 2 each in Portsmouth, Stoke-on-Trent, Coventry, Nottingham, Barrow-in-Furness, and Stockton-on-Tees.

HEALTH OF SCOTCH TOWNS.

In the 16 largest Scotch towns with an aggregate population estimated at 2,345,500 persons at the middle of this year, 951 births and 727 deaths were registered during the week ended Saturday, Oct. 30th. The annual rate of mortality in these towns, which had been 16·3, 15·5, and 15·7 per 1000 in the three preceding weeks, rose to 16·2 per 1000 in the week under notice. During the first four weeks of the current quarter the mean annual death-rate in these towns averaged 15·9, against a corresponding rate of 14·0 per 1000 in the large English towns. The annual death-rate last week ranged from 8·1 in Hamilton, 8·8 in Motherwell, and 10·5 in Clydebank, to 18·0 in Greenock, 19·1 in Kirkcaldy, and 19·8 in Kilmarnock.

The 727 deaths from all causes were 19 in excess of the number in the previous week, and included 77 which were referred to the principal epidemic diseases, against numbers declining from 102 to 81 in the three preceding weeks. Of these 77 deaths, 25 resulted from infantile diarrhœal diseases, 20 from measles, 14 each from scarlet fever and diphtheria, and 2 each from enteric fever and whooping-cough, but not one from small-pox. The mean annual death-rate from these diseases was equal to 1·7, against 1·3 per 1000 in the large English towns. The deaths of infants (under 2 years) from diarrhœa and enteritis, which had been 54, 44, and 31 in the three preceding weeks, further declined to 25, of which 14 were registered in Glasgow, 3 in Dundee, and 2 in Greenock. The deaths referred to measles, which had increased from 6 to 17 in the five preceding weeks, further rose to 20, and comprised 7 in Glasgow, 6 in Edinburgh, 4 in Greenock, 2 in Leith, and 1 in Motherwell. The fatal cases of scarlet fever, which had been 21, 16, and 18 in the three preceding weeks, fell to 14, of which 9 occurred in Glasgow, and 5 in Aberdeen. The deaths attributed to diphtheria, which had been 12, 8, and 9 in the three preceding weeks, rose to 14 last week, and comprised 5 each in Edinburgh and Kirkcaldy, 3 in Dundee, and 1 in Glasgow. The 2 deaths from enteric fever were registered in Glasgow, and those from whooping-cough in Glasgow and Edinburgh.

The deaths referred to diseases of the respiratory system, which had steadily increased from 56 to 136 in the eight preceding weeks, further rose to 158 in the week under notice, and were 66 above the number registered in the corresponding week of last year. The deaths from violence numbered 33, against 16 and 24 in the two preceding weeks.

HEALTH OF IRISH TOWNS.

In the 27 town districts of Ireland, with an aggregate population estimated at 1,212,380 persons at the middle of this year, 559 births and 393 deaths were registered during the week ended Saturday, Oct. 30th. The annual rate of mortality in these towns, which had been 16·0, 14·8, and 16·0 per 1000 in the three preceding weeks, rose to 16·9 per 1000 in the week under notice. During the first four weeks of the current quarter the mean annual death-rate in these towns averaged 15·9, against corresponding rates of 14·0 and 15·9 per 1000 in the English and Scotch towns respectively. The annual death-rate last week was equal to 17·6 in Dublin (against 14·2 in London and 17·6 in Glasgow), 17·1 in Belfast, 13·6 in Cork, 19·0 in Londonderry, 21·7 in Limerick, and 22·8 in Waterford, while in the 21 smaller towns the mean death-rate was 14·4 per 1000.

The 393 deaths from all causes were 22 in excess of the number in the previous week, and included 51 which were referred to the principal epidemic diseases, against 39 and 53 in the two preceding weeks. Of these 51 deaths, 23 resulted from infantile diarrhœal diseases, 8 each from scarlet fever and whooping-cough, and 6 each from measles and diphtheria, but not one from enteric fever or from small-pox. The mean annual death-rate from these diseases was equal to 2·2, against corresponding rates of 1·3 and 1·7 per 1000 in the English and Scotch towns respectively. The deaths of infants (under 2 years) from diarrhœa and enteritis, which had been 37, 29, and 36 in the three preceding weeks, fell to 23, and included 10 each in Dublin and Belfast, and 3 in Cork. The deaths referred to scarlet fever, which had been 5, 3, and 3 in the three preceding weeks, rose to 8, and comprised 7 in Belfast and 1 in Waterford. The fatal cases of whooping-cough, which had been 4, 2, and 5 in the three preceding weeks, further rose to 8, of which 4 occurred in Belfast and 2 in Ballymena. The deaths attributed to measles, which had been 3, 1, and 4 in the three preceding weeks, rose to 6 and comprised 3 each in Dublin and Belfast. Of the 6 deaths from diphtheria, 4 occurred in Belfast.

The deaths referred to diseases of the respiratory system, which had been 47, 42, and 60 in the three preceding weeks, fell to 53 in the week under notice. Of the 393 deaths from all causes, 126, or 32 per cent., occurred in public institutions, and 9 resulted from violence. The causes of 23, or 5·8 per cent., of the total deaths were not certified either by a registered medical practitioner or by a coroner after inquest; in the large English towns the proportion of uncertified causes did not exceed 1·1 per cent.

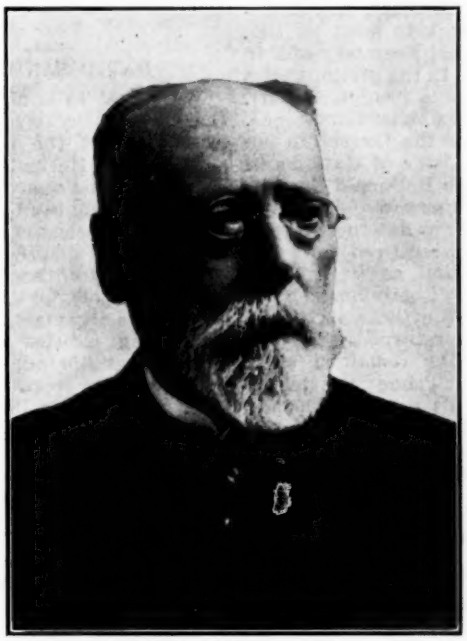
OUTBREAK OF ENTERIC FEVER IN KENDAL.—From information which we have received it appears that there has been a small outbreak of enteric fever in the urban district of Kendal in Westmorland, with a population in 1911 of 14,033. In the absence of Dr. W. B. Cockill, the medical officer of health, who is at present on military duty, the circumstances of the outbreak have been investigated by Mr. Macleod, the acting medical officer of health, and, according to his preliminary report, up to the present 15 patients have been notified as suffering from the disease. Many of them are children who attended a certain school, in the vicinity of which there is a horse-trough at which it was a common practice for the children to quench their thirst, and all the patients, with possibly one exception, are known to have drunk this water. The horse-trough is supplied with water by a water-course. In view of the fact that an old sewer was discovered at a higher level than the water-course, it seemed probable that a leakage from the sewer might have contaminated the water delivered to the horse-trough, and this suspicion was confirmed by application of the fluoresceïn test. On the sewer in question being opened up and a solution of fluoresceïn poured into it, the water-course in an hour's time became tinted, as also the water in the horse-trough at a later period. Mr. Macleod is therefore of opinion that specific contamination of the water in the horse-trough, from the leakage of the sewer, is the probable source of the outbreak. It will be interesting to learn if the further investigations now being undertaken confirm this hypothesis. It appears to us that in any case the drinking of water from a horse-trough is very undesirable.

Obituary.

CHARLES JACQUES BOUCHARD,

PROFESSOR OF PATHOLOGY IN THE UNIVERSITY OF PARIS.

MEDICINE has to deplore this week the death of one of its most eminent representatives, for Professor Bouchard, it is announced, has succumbed at Lyons to the sequelæ of a serious automobile accident, having escaped immediate death by a miracle. With him there has disappeared one of the well-known personalities in international medicine; and although for some years he had lived a great deal in retirement he none the less remained a great figurehead of our science on the ground of his past work, of the distinction of his many pupils, and because he was seen by all to be one of the last of the encyclopædic doctors. Bouchard could justify a claim to have kept abreast of the developments of medicine in an all-round way, and this is now becoming impossible.



PROFESSOR CHARLES JACQUES BOUCHARD.

Charles Jacques Bouchard was born on Sept. 6th, 1837, at Montier-en-Der (Haute Marne), and received the early part of his medical education at the Lyons Medical School before entering the Faculty of Medicine of the University of Paris. After holding the usual residential and minor posts at different institutions he obtained his doctorate in 1866, and embarked upon a career of remarkable professional success. He was appointed *chef de clinique* in 1868, he became *professor agrégé* in 1869, *médecin des hôpitaux* in 1870, and professor of pathology in the University of Paris in 1873, in which year he was elected a member of the Académie de Médecine. In 1887 he became a member of the Institut, and later an officer of the Legion of Honour and President of the Academy of Sciences. He thus laboured devotedly for more than 50 years at clinical medicine and general pathology, conducting also research work which in many directions has influenced materially the course of practical therapeutics. He was a most patient observer of men, and from his hospital practice as well as from his laboratory and by his writings he shed light on many difficult subjects in medicine proper, in bacteriology, and bio-chemistry. He worked upon ptomaine poisoning, on the functions of leucocytes, on the pathology of nutrition, the bactericidal power of the blood, on immunisation, vaccination, and auto-intoxication, on radiology, and on many of the problems of tuberculosis. Indeed, he was one of the earliest to unite the researches of the laboratory with clinical observation, while at the Faculty of Medicine in Paris he was the first to give to microbiology its right place. He was elected president of the Society of Biology, and was also a member of the Superior Council of Public Instruction.

He was a lucid writer, and editor at one time of the *Journal de Physiologie et Pathologie Générale*, of the *Revue de Médecine*, and of the *Revue de la Tuberculose*. His published works include a book on Nutrition (1879), Lessons on Auto-intoxication (1887), the Therapeutics of Infectious Diseases (1889), and a general treatise on Medicine and Pathology (1899). At the Tenth International Congress of Medicine held at Berlin in 1890 he represented France, and acquitted himself of a delicate mission with a dignity which was recognised by all the doctors of the world there present. His discoveries, his writings, and his general services to medicine earned for him the high regard which he alike enjoyed in France and abroad, and his death will be generally regretted among his professional colleagues of all nations.

THE RIGHT HON. SIR CHARLES TUPPER, BART., M.D. EDIN.

ONE of the fathers of Canadian federation, a distinguished politician, and probably the oldest medical graduate of the University of Edinburgh, Sir Charles Tupper has passed to his rest, full of years and honours, at the patriarchal age of 94. Few men have lived more vigorously, first in the rough and tumble of a large general practice in Nova Scotia and then in the more turbulent area of politics, yet he retained good health of mind and body nearly to the end. Like so many distinguished Nova Scotians, he was of New England stock, and descended from Thomas Tupper, who emigrated from England in 1635.

Charles Tupper was born in 1821, the son of a Baptist clergyman; he had his early education at Horton Academy, U.S., and in 1839 went to Edinburgh University, graduating in 1843 with a thesis "On the Mechanism and Management of Parturition, illustrated by a report of 116 cases." He was never tired of talking of the happy life spent there as a medical student. Simpson, then newly appointed to the chair of midwifery, was his

favourite teacher, and he kept up warm friendships with many of his old professors. Only a few months ago he promised the writer to jot down the reminiscences of his Edinburgh life. Returning to his native town, Amherst, he very quickly had a large and widespread practice. He was fond of surgery, and was one of the few men remaining who could talk of personal experiences in pre-anæsthetic days. He told the writer of an amputation at the hip-joint for sarcoma performed on a farmer's wife on the kitchen table, with a sailor as assistant. The patient lived 18 miles away, so he was never able to make a second visit. Three months later the farmer drove to Amherst with his wife strong and well.

In 1855 Sir Charles Tupper entered public life as member of the Nova Scotia Assembly, and immediately pushed to the front rank in local politics, becoming successively Provincial Secretary and in 1864 Premier of the Province. In the preliminaries to confederation, 1867, he took a prominent part, and was a member of the Westminster Conference. In 1870 he became President of the Council in the Dominion Government and Minister of Customs in 1872. Following the fall of the McDonald Government, he was the life of the Conservative party, and to him more than to any other was due their return to power in 1878. In 1884 he retired from the Ministry, and took the position as High Commissioner in London for the Dominion. For a short period he was again in the Ottawa Cabinet as Minister of Finance, but returned as Commissioner to London, where he remained until 1896. In this year he became Prime Minister of Canada. After the defeat of his party he was the leader of the Opposition, but in 1900, after the general election, he retired from public life. In 1888 he was created a baronet of the United Kingdom.

At intervals in this busy life he practised his profession at Halifax, Ottawa, and for a year or more at Toronto. He took an active part in the formation of the Canadian Medical Association, and to the end retained keen interest in the progress of medicine.

Canada owes a deep debt to Sir Charles Tupper, and his political opponent, Sir Wilfred Laurier, very truly said that next to Sir John A. McDonald, the man who did most to bring about the federation of the Canadian provinces was Sir Charles Tupper. With a strong and daring personality, he had all the qualities for success in public life—calmness and clear judgment in victory, resolution and hopefulness in defeat. Nothing in his history was more remarkable than to have "stumped the country" successfully for his party when in his eightieth year. A strong Imperialist, Sir Charles Tupper once remarked that "the two aims he has always kept in view ..... have been the strengthening of the golden link which connects England with the first and greatest of her colonies and the holding aloft of the standard of right of the nation so that she may prove herself worthy of the proud position she has made her own." His life is an illustration of the brilliant success of the doctor in politics. We have to go to France or to the South American Republic to parallel his career. But he never really served two masters; from 1855 he was a politician first, and a practitioner only when stranded by the exigencies of party.

A few months ago he, in reply to a question as to what he attributed his kindly old age, said: "A good constitution, a good digestion, and a capacity to sleep." It was in truth his good arteries, which were scarcely palpable when the blood stream was pressed out. Yet here was a man who in 1880–1 was ready to throw up the sponge, as he was believed to have Bright's disease! Some years ago, in a paper "On the Advantages of a Trace of Albumin and a Few Tube Casts in the Urine of Men above 50 Years of Age," the writer mentioned his case. In 1881 he saw Andrew Clark, who gave most sensible advice, but was inclined to take a grave view of the renal condition. The advantage of the discovery was never better illustrated, as he ever after lived a careful life.

The baronetcy devolves on Sir Charles Tupper's grandson, a barrister in Winnipeg.

W. O.

DAVID SANDLER, M.B., CH.B. EDIN.

WE regret to announce the death, suddenly, on Oct. 20th, of Dr. David Sandler, who was a medical missionary of the Church of Scotland at Constantinople. He had lived a great part of his life abroad and had many foreign friends and relatives. After attending the Universities of Edinburgh and Glasgow, and classes at various universities on the continent, he qualified at Edinburgh in 1902, and went to Constantinople to do medical mission work, where his polyglot equipment was of great assistance to the organisation. For several years he sent interesting articles and paragraphs of news to THE LANCET, his large Turkish acquaintance giving him particular opportunities for obtaining information. In the year 1911 the Sultan of Turkey presented him with a gold cigarette-case with initials set in brilliants and rubies in appreciation of the friendly spirit towards the Ottoman Empire shown in his writings. He also contributed a few scientific communications to THE LANCET, and wrote a book entitled "The Vision of the Cross" and a volume of verse entitled "The Bride of the Bosphorus."

WILLIAM JOHN CANT, M.B., B.CH. BIRM., M.R.C.S., L.R.C.P. LOND., L.S.A.,

HONORARY CONSULTING SURGEON, LINCOLN COUNTY HOSPITAL.

Mr. W. J. Cant, whose death at the age of 59 we have already recorded, commenced his connexion with Lincoln in 1879 as house surgeon to the County Hospital. Three years later he entered into partnership, his own specialty being ophthalmic surgery. After an illness in 1900 he was practically an invalid, and finally retired from practice in 1904. During the last month of his life his health had perceptibly failed and he suffered much, but the end came with sudden collapse from which he never rallied, and he passed away peacefully. Besides his appointments as honorary surgeon to the County Hospital and the General Dispensary, Mr. Cant was a medical referee under the Workmen's Compensation Act. He was an occasional contributor to medical literature, chiefly on ophthalmic topics, two of his papers appearing in our columns.[1]

Mr. Cant married, in 1891, Ethel Mary Florence, grand-daughter of James Aspinall Turner, M.P., D.L. His widow, with one daughter, survives him.

[1] THE LANCET, June 23rd, 1888, and Oct. 25th, 1890.

Correspondence.

"Audi alteram partem."

THE INTERESTS AT HOME OF THE DOCTOR AT THE FRONT.

To the Editor of THE LANCET.

SIR,—The War Emergency Committees which are being formed in different districts with a view to finding medical men for the troops have difficult tasks in front of them. The most difficult is the care in their absence of the interests of those men who go to the front. I believe that in most districts at the outset of the war meetings were called, and it was arranged that work on behalf of those away at the front should be done on the "half-fee" basis, thus ensuring that the man at home should receive something for doing the work of the absentee. But, Sir, the war continues and seems likely to do so; and it seems probable that at least a second year will elapse before those at the front return to take up their practices again. What will they find left of them when they come back? Doubtless in many cases those at home will have loyally kept their word, but I fear that only too often, owing to indolence or oversight, that half share of the fees for work done will not have been sent to the representatives at home of the doctor at the front, and his interests will not be found to have been protected as they might have been. I know it is quite impossible to force any scheme, arrangement, or rules relating to such matters on the profession, but I think that the ventilation of one or two suggestions in your columns may set men at home thinking and make them more solicitous for the interests of their brethren at the front.

Firstly, there has been published a letter from the Central War Emergency Committee relating to these matters and to the duties owed by members of the public to their absentee doctors; a reference to it appeared in your columns about a fortnight ago. This letter is an excellent one for the education of the public, and I suggest that every local War Emergency Committee should see that it is printed in full in the columns of their local papers; for, Sir, the public do badly need educating in these matters.

Secondly, I suggest that the War Emergency Committee should request the doctors who are doing the work of those at the front not to collect the fees themselves, but to send lists of the visits paid to the partner or the wife, or to whoever is in formal charge of the practice (for though the patients become distributed about, there is usually someone in formal charge). *The collection of the fees can then be done upon the bill-heads* of the man who is away, and his patients will realise as the accounts come in that he is still their doctor. Payment of the half fees to the doctor doing the work will then be made by the representatives of the one at the front.

Thirdly, whether the above plan be adopted or whether the doctor doing the work himself collects the fees, in both cases payment of the half fees should be made as soon as the accounts are rendered, and that whether the patients have paid or not. In the former case the locum should be paid gladly by the representative for doing this work and so helping to keep together the practice, even if a little loss occurs occasionally; in the latter the doctor should gladly contribute the half fees towards the upkeep of his brother medico's family during his absence on the country's service.

Fourthly, the War Emergency Committees should send a list of names of all the doctors who have gone to the army to all the other doctors in their several localities with the instruction that it is their duty and privilege to look after the interests of their brothers at the front always and ever before their own; and that when a new patient comes to them their first duty is to ascertain whether his regular attendant is serving at the front, and if so to make it quite clear that their own attendance must cease as soon as the latter returns home.

I know that objections can be hurled at these suggestions, particularly in relation to the freedom on the part of the public to select its own doctor; but, Sir, these are abnormal times and a little drilling in these matters will, I venture to think, be beneficial alike to both the public and the profession. I am, Sir, yours faithfully,

Hampstead, Oct. 31st, 1915. LEWIS G. GLOVER, M.D.

ETIOLOGY AND PREVENTION OF CEREBRO-SPINAL FEVER.

To the Editor of THE LANCET.

SIR,—Professor G. Sims Woodhead has kindly sent me a reprint of his presidential address to the Royal Microscopical Society delivered on Feb. 17th last. This I had not seen previously and was unaware, when writing in THE LANCET of Oct. 16th, that Professor Woodhead had pointed out the relation of naso-pharyngeal catarrh, associated with overcrowding, to meningococcal infection, and that the epidemic at Cambridge last winter was checked by effective ventilation of the huts in which the cases occurred.

This is further evidence in favour of the view that the etiology of cerebro-spinal fever depends on the development of pathogenic properties in a saprophytic organism, on the thermal deathpoint of the meningococcus, and on the resistance of the tissues; all these factors having a definite and direct relation to inadequate conditions of ventilation during the winter months, as demonstrated both by clinical observation and by bacteriological experiment.

Sir William Osler, at the Royal Society of Medicine on Oct. 19th, made generous reference to my suggestions for preventing the disease, and endorsed similar measures.

These conclusions, in themselves independent, the result of observation and of thought on different lines, have an importance even beyond the prevention of cerebro-spinal meningitis. They indicate how vast are the possibilities of the great principle of aerotherapy in the treatment and prevention of disease. It is indeed strange that the application of a physiological law, in itself simple, has been so limited, modified, confused, and mostly disregarded. In the treatment of tuberculosis open-air measures were introduced at the price of professional martyrdom, and even now are neither sufficiently understood nor practised.

Sir Robert Philip in 1901, when opening the discussion on sanatorium treatment at the Conference of the National Association for the Prevention of Consumption, entered a strong plea for the widest application of open-air measures in the practice of medicine. Where adopted, this suggestion has met with astonishing success. A distinguished authority on mental disease has recently

assured me that "open-air treatment has been found to have a most beneficial influence on all varieties of recent mental disease, and this form of treatment is more used in such diseases and has given better results than in almost any other class of illness with the exception of tuberculosis."

In our own time advances on these lines may sometimes appear to be slow, and yet in the future, when aerotherapy is more universally recognised and practised, many other branches of medicine will claim this great principle as their own.

I am, Sir, yours faithfully,

HALLIDAY SUTHERLAND,
Temporary Surgeon, Royal Navy.

Oct. 23rd, 1915.

A CASE OF TETANUS: SHORT INCUBATION AND RECOVERY.

To the Editor of THE LANCET.

SIR,—The case of tetanus published by Captain R. Lester Scott in your issue of Oct. 30th is most interesting and instructive. Notes of "twitchings" and "jerkings" are common in the records of tetanus, but this is, as far as I am aware, the first time that these fibrillations have been demonstrated in the human subject and their relationship with the "jerkings" established.

In experimental tetanus Roaf and Sherrington[1] have called attention to a distinct fine tremor which occurs in the muscles of regions affected by the rigidity of tetanus, and they found it "of help in early recognising the onset of the tetanic condition." We should, therefore, look upon these "twitchings" or "jerkings" not as suspicious or even "premonitory" signs, but as definite early symptoms of tetanus necessitating the immediate institution of energetic treatment without waiting for further developments. Much time would be saved, and time is a factor of inestimable value in these cases, for there is not the slightest doubt that the course of experimental tetanus can be modified by the *early* administration of tetanus antitoxin.

I am, Sir, yours faithfully,

A. T. MACCONKEY.

The Lister Institute of Preventive Medicine,
Elstree, Herts, Oct. 31st, 1915.

MASSAGE IN THE AFTER-TREATMENT OF THE WOUNDED.

To the Editor of THE LANCET.

SIR,—I am very much interested in the remarks of Mr. A. Greenwood and Mr. C. St. Aubyn-Farrer in your issue of Oct. 16th, for it is exactly my experience. I am a masseur with over 20 years' practice in London, and have been giving my services at a hospital for wounded men for some months. It is difficult to get a trained and experienced masseur to give his services, for I have tried to get help, and at times have had 12 patients through my hands in a morning; the majority of cases are stiff joints, and I have nothing to help me in the way of baking machines, which would greatly assist in the result; I have suggested it, but the hospital funds will not allow it, although the cost for a year would not be more than about £60, and by using dry heat would considerably reduce the pain, for in breaking down joints one must give a certain amount of pain to gain any result. I certainly think the War Office should make a grant towards such appliances where they are needed, so that wounded men may reap the benefit, and it is very essential if the men are to regain the use of their limbs.

I quite agree that the lack of coördination between the surgical staff and the masseur is not fair to the patient. Where I am at work I have not once received instructions of what is required from a medical man. The sister in charge orders massage and thinks that is sufficient. I have to use my own judgment and do what I think will be beneficial, and I have not seen a diagnosis of one case. If I had no more knowledge of my work than what is obtained from 12 lessons, I should be practically working in the dark, and I fear often do more harm than good. It is quite time such work was taken up by the authorities, who should see when massage is ordered that instructions were given and properly carried out.

I hear that officers who have been discharged from hospital are told to go to this or that hospital and they can have massage free of cost; yet more often than not they can well afford to pay for it, having their regimental pay, plus a private income. Yet the masseur, whose private work is now considerably reduced and his only means of subsistence, is expected to work for nothing, which is neither just nor fair.

I am, Sir, yours faithfully,

E. PRIEST,
Masseur.

Canfield-gardens, N.W., Oct. 24th, 1915.

[1] Journal of Physiology, August 10th, 1906.

THE MEDICAL EXAMINATION OF RECRUITS.

To the Editor of THE LANCET.

SIR,—I have had passing through my hands lately many soldiers and sailors suffering from tuberculosis, some of whom have been under treatment before enlisting, others who have broken down whilst training or on active service. On questioning these men, either in hospital or at dispensaries, I find that most of them have passed into the services without any examination of the chest.

May I point out that this procedure is not economy, and may I ask all medical officers examining recruits to examine, in addition to the cardiac area, the apices behind. If this were systematically done I am certain the sickness rate in new formations would be greatly diminished.

I am, Sir, yours faithfully,

FRANK CLIFFORD,
Tuberculosis Physician, Swansea Union Area (King Edward VII. Welsh National Memorial Association).

Tuberculosis Institute, Grove-place, Swansea, Oct. 29th, 1915.

TRAUMATIC ASPHYXIA.

To the Editor of THE LANCET.

SIR,—The remarkable case of traumatic asphyxia so lucidly described and explained by Mr. W. W. Linington in your issue of Oct. 23rd recalls to my mind a similar one occurring this year. A lady was pinned down beneath an overturned motor-car and when released was seen by myself and Dr. S. L. B. Wilks about half an hour later. Her face was then deeply cyanosed and lips swollen, but one noticed her hands and rest of her body were normal in colour. Breathing was stertorous and much mucous râle present all over chest. Cerebro-spinal fluid was dripping from both ears. She died about an hour later. I suggested that the jugular foramen was crushed in on both sides and the veins compressed, but I now see that Mr. Linington's theory fits in with the case more satisfactorily.

I am, Sir, yours faithfully,

W. B. RUSSELL, M.B.

Colwyn Bay, Nov. 1st, 1915.

THE QUALITIES OF PARALLEL LINES.

To the Editor of THE LANCET.

SIR,—In the course of his admirable oration (THE LANCET, Oct. 30th, p. 915) Dr. Sidney Coupland states that "yet the two (viz., the psychical and the physical) remain essentially independent, like parallel lines that never actually blend."

May I ask whether the lecturer wishes to imply that parallel lines are "essentially independent"? This would be contrary to the fundamental rules laid down by Descartes, whom Dr. Coupland quotes. By means of the Cartesian coördinates the dependence of parallel lines on one another is shown in the equation $y - y_1 = a\,(x - x_1)$, or by adopting a system of trilinear coördinates $(mn_1 - m_1n)\,a + (nl_1 - n_1l)\,b + (lm_1 - ml_1)\,c = O$.

In what way else should parallel lines differ, say, from the asymptote to a curve?

I am, Sir, yours faithfully,

Hove, Nov. 2nd, 1915. NOËL ADLER.

A USEFUL MEDIUM FOR THE BACTERIOLOGICAL EXAMINATION OF FÆCES.

To the Editor of THE LANCET.

SIR,—The media which have been proposed for the bacteriological examination of fæces are numerous. This proves that none of them have decisive advantages. It has been reasonably said that the success of such an examination depends largely upon the capability, experience, and perseverance of the examiner more than on the media employed.

These media can be divided into three categories. Under the first come the media which give to colonies only of the B. coli a distinguishable aspect which at once differentiates it from other colonies. Under the second category come those media which either aim at a favourable development of the pathogenic bacteria (I mean those of the typhoid group), or at least act as a preventive, so far as possible, against the growth of non-pathogenic micro-organisms. Lastly, under the third category came those media which are reputed to combine the advantages of the first two categories. But it may be said that whatever the medium, it must be above all easy and non-expensive to prepare, because there actually does not exist a really favourable medium (as, for instance, peptone solution for cholera vibrio), consequently the more cultures of the matter under examination are made the greater are the chances of a successful result. This consideration encourages me to propose a new medium.

It does not present a superiority over the others in so far as the results are concerned, but I am prepared to state it is not inferior. The advantages it offers are the quick and easy preparation, besides which it lends itself to many useful modifications. This medium is analogous to that of Endo, in which the ordinary fuchsin is replaced by the Weigert's acid fuchsin (Grubler), with the difference that instead of preserving its colour, as done by Kindborg, it is decolourised. The process of its preparation is as follows:—

To 100 c.c. of 3 per cent. agar slightly alkaline to litmus are added: (1) 1½ grm. of lactose (or any sugar) dissolved in 4 c.c. of distilled boiling water and further boiled ½ min.; (2) 10 c.c. of ½ per cent. watery solution of acid fuchsin brought to boiling point and decolourised by adding four drops of a normal solution of sodium carbonate and by boiling again until it assumes a port-wine colour.

The agar thus prepared presents all the advantages and disadvantages of Endo's medium, but also has its own special advantages—namely, it is very easily prepared from staple solutions and is not affected by light. Furthermore (should one wish to make this medium more differentiating), there may be added nutrose or caffeine or malachite-green (in tested solution as for Lentz and Tietz's medium) or crystal violet (10 drops of 1 in 1000 solution). In the two last combinations the background is green (or blue) and the coli colonies are violet (or red).

Fæcal matters artificially infected with bacilli of dysentery or typhoid groups gave the same results on this new medium as on Endo's or Drigalski's media. In four cases of typhoid fever confirmed by Widal's reaction fæces and urine have been examined bacteriologically by making cultures on the new medium. In three of these cases the fæces only gave a positive result, and in one case both urine and fæces were positive. At the same time similar test-cultures made on Lentz and Tietz's medium gave the same results. One case of paratyphoid B also gave a positive result. On the contrary, in one case of non-amœbic dysentery the cultures on the new medium did not give any result, and a similar negative result was obtained with cultures on Drigalski's medium without crystal violet.

I am, Sir, yours faithfully,

C. G. DELTA,

Oct. 18th, 1915. Chief of the Laboratory of Hygiene, Alexandria.

CHANGE OF NAME.

To the Editor of THE LANCET.

SIR,—I wish to let you know that I have changed my name from Grunbaum to Leyton. The reason for my doing this is a desire to dissociate myself as far as possible from a nation the deeds of which make it lose any right to be included amongst civilised races.

I should like to add that I have not been conscious that my German name has led to my having been submitted to any discourtesy.

I am, Sir, yours faithfully,

92, Portland-place, W., Nov. 2nd, 1915. O. LEYTON.

THE TRAINING OF CHEMISTS.—Dr. James Walker, F.R.S., Professor of Chemistry in the University of Edinburgh, delivered recently the opening address to the members of the Edinburgh and East of Scotland section of the Society of Chemical Industry. He admitted that we could learn much from the enemy. The connexion between academic and industrial chemistry was not sufficiently close in this country. It seemed to him that we stopped the education of our chemists at a point short of where the education ought to stop. A student got his B.Sc. degree without having done any research. No science degree was given in Germany without the students having done some research. Two years, he said, would be reasonable time to spend in research, and he approved the action of some of the English universities in introducing an intermediate degree of Master of Science between the B.Sc. and the D.Sc. An honours degree in the B.Sc. would do a good deal to meet the difficulties on the academic side. As to the industrial side, he said that in Germany the academic chemist was turned straight out of the university into the works and brought face to face with practical problems. That was a very good way. In America the manufacturer would state his industrial problem to the university and the university supplied the chemists, who endeavoured to work out the practical problem.

The War.

THE CASUALTY LIST.

THE following names of medical men appear among the casualties announced since our last issue:—

Died.

Lieutenant B. C. Letts, R.A.M.C., who graduated M.B., B.Ch. at Queen's University, Belfast, in 1913.

Died of Wounds.

Captain A. Graham, R.A.M.C., attached to the 7th Essex Regiment (T.F.).

Drowned.

Lieutenant H. F. Young, R.A.M.C.

Wounded.

Captain W. Brown, R.A.M.C., Scottish Horse Mounted Brigade Field Ambulance (T.F.).

Captain A. B. Foott, R.A.M.C.

Captain V. C. Martyn, R.A.M.C.

Lieutenant N. Booth, R.A.M.C., attached to the 7th Seaforth Highlanders.

Previously reported Missing, now reported Prisoner.

Captain D. A. Laird, R.A.M.C., attached to the 2nd Yorks Regiment.

THE HONOURS LIST.

The following promotions and appointments of medical officers for distinguished service in the field have been made:—

To be C.B., Military Division, additional members:

Colonel P. Hehir, I.M.S.

Lieutenant-Colonel (temporary Colonel) W. H. B. Robinson, I.M.S.

Lieutenant-Colonel J. Hennessy, R.A.M.C.

To be C.M.G., additional member:

Lieutenant-Colonel W. G. Pridmore, I.M.S.

To be Brevet-Major:

Captain R. E. Wright, I.M.S.

To be Companions of the Distinguished Service Order:

Major H. A. Bransbury, R.A.M.C.

Major R. W. Knox, I.M.S.

Captain Bertram Sibbald Finn, New Zealand Medical Corps.

For conspicuous devotion to duty in the Gallipoli Peninsula during operations from August 6th to 9th, 1915, when he worked day and night with unceasing zeal and without rest evacuating the wounded. His work was carried out under continuous fire, on one occasion the dressing station being heavily shelled for an hour, and many assistants and wounded being hit. Owing to Captain Finn's efforts the wounded lying in the more exposed positions were got into a place of greater safety.

Awarded the Military Cross:

Captain E. B. Allnutt, R.A.M.C.

Lieutenant Narayan Krishna Bal, I.M.S.

Temporary Lieutenant Allan Noel Minns, 39th Field Ambulance, R.A.M.C.

For conspicuous gallantry and devotion to duty at Suvla Bay, Gallipoli Peninsula, on August 30th, 1915, when attending to the wounded under heavy shrapnel fire. Another officer who was assisting him was killed. Lieutenant Minns later returned to the dressing station, took out 12 stretcher squads, and brought in 24 wounded men.

Temporary Lieutenant Harry Bertram Walker, R.A.M.C., attached 9th Battalion, York and Lancaster Regiment.

For conspicuous gallantry and devotion to duty near Armentières on Sept. 25th, 1915. A battery was being heavily shelled, but he proceeded at once to attend to the wounded at one of the guns. While doing this the next gun was put out of action, all the detachment being killed, but he continued to attend to the wounded till the arrival of the field ambulance.

DEATHS AMONG THE SONS OF MEDICAL MEN.

The following sons of medical men must be added to our lists of those who have fallen during the war:—

Second Lieutenant J. Gay, Royal Flying Corps, only son of Dr. J. Gay, of Putney, London, S.W.

Captain A. L. Hunt, fourth son of the late Dr. A. Hunt, of Dungarvan, co. Waterford, Ireland.

Lieutenant G. H. Cook, 101st Grenadiers, Indian Army, son of the late Surgeon-General H. Cook, I.M.S.

Captain G. B. Davies, 11th Battalion, The Essex Regiment, only son of Dr. H. R. Davies, of Woodford Green, Essex.

Lieutenant G. T. V. Webb, 2nd Hampshire Regiment, youngest son of the late Captain W. W. Webb, I.M.S.

THE WAR EMERGENCY SCHEME OF THE LONDON PANEL COMMITTEE.—The London Panel Committee has issued its war emergency scheme for the restriction of the right of transfer of insured persons on the lists of practitioners absent on war service, and for the treatment of insured persons on the lists of such practitioners. Under the scheme which has been approved by the Commissioners and by the Insurance Committee, the Panel Committee will undertake that the services of a practitioner on the panel shall be available for the treatment of any insured person on the list of a practitioner absent on war service, who has taken advantage of the facilities offered. Two classes of practitioners have to concur, those who are leaving their practices and those who are willing to treat the patients of their absent colleagues. A circular sets out the conditions with which the former are asked to comply. These are, briefly, that he should give the Panel Committee as long notice as possible; that he should authorise the secretary to make all the necessary arrangements; that he should authorise the Insurance Committee to pay to the Panel Committee one-half of the moneys due to him in respect of the insured persons on his list; that he should hand to the Panel Committee, if and when required, the medical register cards of the insured persons on his list. On their part the Panel Committee will prepare and circulate lists of the absent practitioners for whose patients they are making arrangements, and of the medical practitioners who undertake to treat such patients, and the patients of the former will then be entitled to receive treatment from the latter, the Panel Committee undertaking to find a practitioner to give the requisite treatment if the insured person has any difficulty in doing so. The fund in the hands of the Panel Committee will be distributed quarter by quarter and as soon as possible after necessary deductions for expenses in proportion to the number of individual cases treated by the practitioners who undertake to do the work and who will furnish quarterly statements, giving name and address, Approved Society, and other particulars asked for in respect of patients thus treated by them. A practitioner undertaking to work under the scheme, who refuses in any case to provide treatment under it, will not be entitled to participate in the distribution for the current quarter. Provision is made for the settling of any questions arising as to the interpretation of the scheme, or as to arrangements made under it, by reference to a section of the Panel Committee which will report. Upon such a report being made to it the Panel Committee will decide the matter and its decision will be final. For notification of readiness to undertake the treatment of the insured patients of those absent on war service printed forms have been prepared, and these will be submitted for signature to practitioners who are willing thus to render effective assistance in a time of great need for the services of all. It is hardly necessary to add that those who, for good reasons, are unable to render direct professional assistance to our armies in the field, are enabled, under such a scheme as the London Panel Committee has devised, to render valuable aid to their country by helping to release others for war service.

TYPHUS FEVER IN SERBIA.—Dr. R. O. Moon delivered the second Chadwick public lecture, entitled "Relation of Typhus to (*a*) Plague, (*b*) Relapsing Fever, (*c*) Enteric Fever," at the Royal Society of Medicine, on Oct. 29th, Sir James Crichton-Browne, F.R.S., being in the chair. Dr. Moon showed how typhus in the past had been confused with at least three other important diseases. The famous plague of Athens at the outset of the Peloponnesian War, so graphically described by Thucydides, bore a much greater resemblance to typhus than to bubonic plague, and there was little doubt that the Greek historian was really describing typhus under the name of plague. The same was true of the great plague described by Galen in the time of Marcus Aurelius, of which the emperor himself died. Though associated with destitution and want there was not the same intimate connexion between plague and war as in the case of typhus and war. The origin of plague was cleared up by the discovery of the causative micro-organism

by Kitasato in 1894, and we know that it is spread by rats, which are unaffected by typhus. Relapsing fever occurred in circumstances similar to those of typhus, and though practically banished from these islands since 1870 it had been extremely common in Serbia. With a superficial resemblance to typhus, yet the remarkable relapse, with absence of any rash, together with very low mortality, made it surprising that science should so long have failed to distinguish between them. Though less important than typhus it seemed to produce greater suffering. From enteric fever, typhus was not disentangled till the middle of last century, though the two diseases are totally different. Enteric fever was associated with a serious ulceration of the intestine, making the feeding of the patient all-important. Typhus, though a more malignant and fatal disease, was without any important local lesions. Of enteric fever we knew the micro-organism, and thanks to the labours of Sir Almroth Wright we could employ a useful prophylactic inoculation, whilst we were still ignorant of the micro-organism causing typhus, and consequently unable to protect against it. Typhus has thus gradually emerged from all the confusion which surrounded it in former days as a conspicuous example of the success of that continued process of differentiation and analysis by which science brings order out of chaos. But this process of analysis was not permanently satisfying to the human mind, and unless some synthesis could be found the student would be launched on that limitless sea of particulars which Plato considered inimical to all true knowledge.

VACANCIES FOR MEDICAL OFFICERS.—There is a vacancy for a medical officer in one of the Yeomanry regiments of the 2/1st South Wales Mounted Brigade, now stationed on the East Coast. There is also a vacancy for a lieutenant in the Mounted Field Ambulance. Particulars can be obtained from Lieutenant-Colonel Herbert Jones, Lyons Farm, Blythburgh, Halesworth.

COMFORTS FOR SCOTTISH SOLDIERS.—The Lord Provost's Comforts Committee is making an appeal for further support, an appeal the tone of which is increased by the record of work already done. The committee started its operations in the City Chambers, Edinburgh, on August 15th, 1914, to assist all Scottish regiments. Whilst this was the case it had always recognised that its principal object must be to help the home regiment, the Royal Scots. Consequently the largest number of articles received have gone to them. The following list of articles sent give some idea of the work of the committee in respect of the Royal Scots during the past 12 months: Socks, 14,161 pairs; gloves, 3404 pairs; shirts, 5797; mufflers, 2798; helmets, 2126; handkerchiefs, 2780; Tommy's cookers, 1000; insect powder, 1700 tins; belts, 2070; blankets, 1004; cardigans, 534; undershirts and pants, 1042; towels, 1800; condensed milk, 1000 tins; pipes, 1000; refreshlets, 5760. In May last the Comforts Committee opened a special fund for the Royal Scots, and a sum of £2600 has been received. The committee is in constant touch with the commanding officers both in France and in the Dardanelles, and is kept well informed as to requirements. Only recently a cable from Colonel Young, 1/4th Royal Scots, asked for oatmeal which was at once sent.

CIVIL SANITATION AND THE WAR.—At the opening meeting of the Liverpool Medical Institution on Oct. 21st Dr. E. W. Hope, the President, delivered an address entitled "Civil Sanitation and the War." Dr. Hope showed how manifold and unexpected were the results of the war on the sanitary administration of a great city such as Liverpool. The health department was called upon to supervise camp and billet and to undertake means to limit infection, to supervise contacts, to provide baths, and to supervise food supplies and food contracts. He referred to the sudden depletion of the medical staff working under the health department. The address was a revelation of the difficulties the health authorities had to deal with owing to loss of horses, loss of motor wagons, and loss of men, and it was most satisfactory to find that in spite of these difficulties the medical officer of health was able to report most satisfactorily as to the present health of the city. In passing he referred to the unparalleled prosperity of the working classes of that port as the outcome of the war, and he concluded with the hopeful view that, however long the final issue of this war may be delayed, there is no reason to fear that our anxieties abroad will be added to by social deprivations at home.

THE ARGENTINE CONTINGENT.—The Argentine has sent more than 5000 men to the fighting line, which means almost every unmarried man of military age of British origin living in that Republic. They came voluntarily, and not only gave up their employment, but contributed as far as they were able towards the expenses of their long journey of 7000 miles. Over 4000 of them were able to pay their own fares; the rest were assisted by the local British Committee. The thanks of the Empire are due to that patriotic committee and to their chairman, Dr. John O'Conor, who personally and gratuitously examined and certified every man who came over.

ABERDEEN UNIVERSITY AND WAR SERVICE.—At a meeting of the General Council of the University of Aberdeen held on Oct. 16th Principal George Adam Smith stated that there were now 1469 members of Aberdeen University on war service. These include 920 graduates, 113 alumni, at least 290 students, while other members and servants of the University bring the number up to 1469. 1359 of these are on active service and 100 in training. With regard to casualties, Principal Smith said that so far 48 had been reported as killed, of whom 30 were graduates, the others being students and alumni; 10 were missing, 7 were prisoners, over 90 were wounded, of whom 43 were graduates, making the casualties altogether 155. If they took the number on service as 1369, that meant considerably more than 1 in 10. If the smaller number of those at the front actually fighting were taken the proportion of casualties was, of course, much greater.

THE HEALTH OF THE WORKERS.—At the Institute of Hygiene on Oct. 27th Dr. F. Shufflebotham, late lecturer on industrial diseases at Guy's Hospital, discussed the question of war work and its limitations, emphasising the importance of health in relation to the output of munitions and to other industrial war work. Too much stress, he thought, had been laid on the question of the number of hours during which workmen should be employed without taking into consideration the conditions under which the work was being done. In his opinion the housing of workers was quite as important as that of soldiers. It should be remembered that three millions of young and healthy life had been diverted from civil life and that this necessitated greater care of those who remained.

URGENCY CASES HOSPITAL.—Under the title of "A Little Hospital in France," in the *Times* of Oct. 28th, Mr. Stephen Paget writes an eloquent account of the hospital for urgency cases behind the French lines in the Argonne, of which he is chairman, and which was first introduced to the favourable attention of our readers in a letter from its promoters in THE LANCET of Feb. 27th. Major Mayo Robson, C.V.O., went out for a month to see it started at Bar-le-duc, and since our brief notice of July 24th the hospital has been moved to a more convenient site near Revigny, where six timber-built wards, each for 20 patients, heated with coal stoves and lighted by electricity, have been put up in the grounds of a deserted country house at Faux Miroir. Labour being so scarce, the hospital was glad to avail itself of the aid of the Friends' War Victims' Relief Expedition, who have many university men and others erecting temporary wooden dwellings for the burned-out French peasants. But these 120 beds are no longer sufficient, and the French authorities wish to increase the number as soon as possible to 200. Mr. Paget states that for £3000 the hospital can be kept going through the winter, and adds—in which we cordially support him—that this representative British unit of good surgery and good nursing, this living sign of our national thankfulness to France, *must* be maintained in its activities. Donations should be sent to the honorary secretary at 50A, Curzon-street, W.

THE CRAIGLEITH HOSPITAL CHRONICLE.—This journal, the profits on the sale of which add much to the comfort and well-being of the sick and wounded in the 2nd Scottish General Hospital, has now nearly completed its first year of existence, and the last issue maintains a previous high standard. Its varied contents combine to make an interesting journal, and we congratulate both the editor and the contributors upon the success of their efforts to entertain the public and at the same time help the occupants of Craigleith Hospital, Edinburgh.

OBITUARY OF THE WAR.

WALTER ROWLAND SOUTHALL ROBERTS, M.B., CH.B. BIRM., D.P.H. OXON.,

CAPTAIN, ROYAL ARMY MEDICAL CORPS.

Captain W. R. S. Roberts, who was killed whilst serving with the Mediterranean Expeditionary Force towards the end of September, at the age of 33, was the son of the late Mr. James Roberts, of Newport, Salop. Educated at Buxton College, he studied medicine at Birmingham University, taking the Ingleby and Queen's scholarships, and qualifying M.B., Ch.B. in 1906, after which he held several resident appointments. He then took up public health work and became medical officer of the Ongar rural district and a tuberculosis officer for the county of Essex. Attached to the 3rd East Anglian Field Ambulance (T.F.), he volunteered for foreign service and was sent to the Near East, where he met his death. He married in 1907 the only daughter of Mr. S. H. Cobb, of Newport, and leaves a widow and two children.

GEORGE LEONARD GRANT, B.A. CANTAB., M.R.C.S., L.R.C.P. LOND.,

CAPTAIN, ROYAL ARMY MEDICAL CORPS.

Captain G. L. Grant, only son of Dr. and Mrs. Leonard Grant, of New Southgate, who was killed in France on Oct. 11th at the age of 25, was educated at Epsom College and Queens' College, Cambridge, being a keen member of the O.T.C. at both. At Epsom he gained the Brand prize and the Stone scholarship, the former testifying to the esteem in which he was held in respect of his character and conduct. On leaving Cambridge he entered the London Hospital, where he studied for his medical and surgical qualifications. He went to France in the ranks of the London Scottish, but on arrival was transferred to hospital work and given a commission in the R.A.M.C. For some months he was surgeon on an ambulance train, but latterly acted as medical officer in charge of the London Scottish. In accordance with the traditions of the brigade to which the London Scottish belong, though against the regulations issued for the guidance of medical officers, he devoted himself, without regard to his own safety, to the relief of the wounded on the field during the fierce action on Sept. 25th. He came providentially through the burden and heat of that terrible day with honourable mention and without damage, only to succumb on Oct. 11th when he was in the act of conducting his morning sick parade. He was hit by a shell on the back of the head and died a quarter of an hour later without recovering consciousness. A telegram of Royal sympathy was received by his parents, and his commanding officer writes of him as follows: "He was a man whom we all admired and loved. always hard-working and efficient and particularly cool and courageous in action." A fellow officer adds: "His dressing station was always right up where it was most wanted, and he went about his work absolutely fearlessly, and many a poor chap has got him to thank for a speedy recovery from bad wounds."

Captain Grant was a soldier at heart. While still in the Cambridge University Officers Training Corps he took both the A and the B certificates. On entering the London Hospital he joined the ranks of the London Scottish, and it was just as his regiment was leaving for France that he passed the final examination for his medical and surgical qualifications. His heart's desire was to be medical officer to his old regiment, and fate willed that it was to be so. The remainder of his too short life was spent in its service, and death came to him while he was performing his duties.

EDGAR FAULKS, M.R.C.S., L.R.C.P. LOND.,

LIEUTENANT, ROYAL ARMY MEDICAL CORPS.

Lieutenant E. Faulks, who was killed in France on Sept. 26th at the age of 38, received his medical education at Guy's Hospital, where he held four resident appointments and was elected president of the resident staff. His chief speaks of his excellent work and influence for good over others as well as of his "tactful administrative powers." After further hospital experience he was appointed to the epileptic colony at Ewell, and 11 years ago joined the staff of the London County Asylum, Bexley, where he became senior assistant medical officer. The superintendent writes: "The psychiatric branch of medicine has suffered a loss of one of its young and promising members. Dr. Faulks was a keen observer and an excellent clinician, and gave promise of becoming a very able administrator. His happy, optimistic, and kindly nature endeared him alike to his patients and to the staff." When war broke out he offered his services and received a temporary commission as lieutenant in the Royal Army Medical Corps in June last. He had been in France only about three weeks when he was shot through the chest while attending a wounded gunner, and death was immediate. His adjutant writes of having lost a dear friend and a good comrade, and a message of Royal sympathy was received by his father. A memorial service was held at Swan-street Chapel, Loughborough.

ROYAL SANITARY INSTITUTE.—On Friday next, Nov. 12th, at 10 A.M., in the Town Hall, Ripon, a sessional meeting of the Royal Sanitary Institute will be held jointly with the Yorkshire branch of the Society of Medical Officers of Health. The chair will be taken by Lieutenant-Colonel H. R. Kenwood, R.A.M.C., and a discussion on a Recent Outbreak of Food Poisoning at Leeds will be opened by Dr. William Angus. This will be followed by a discussion, which will be opened by Mr. Arthur Smith, on the Construction and Working of the New Camp Sewage Works. A visit will be made to the works at Fisher Green at 12.45 P.M. —Another sessional meeting will be held on Tuesday, Nov. 23rd, at the Royal Sanitary Institute, Buckingham Palace-road, at 4.15 P.M., when Dr. Louis Parkes will open a discussion on the National and Social Aspect of the Lower Birth-rate. Sir Henry Tanner, C.B., I.S.O., will preside, and general discussion is invited. For both meetings application for tickets should be addressed to the secretary of the Institute; for the first meeting application may also be made to the local secretary, Dr. W. D. Jefferson.

Medical News.

ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH, ROYAL COLLEGE OF SURGEONS OF EDINBURGH, AND ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW.

The examinations of this Board, held at Edinburgh, were concluded on Oct. 23rd, with the following results:—

First Examination.—Edward John Pearson (with distinction), Trevor Francis Thomas, Thomas Ferguson Minford, Maurice Julius Woodberg, Thomas Richard O'Keefe, William Runciman, and Gordon Spivey Woodhead.

Second Examination.—Samuel Saxon Barton, Lennie Philip Samarasinha, Don Alfred Walpola, George Carter Cossar, Thomas Lloyd Edwards, Allan Paul McLeod, Daniel Cornelius Howard, John Thomas Whicker Gale, and Donald Leslie Henderson.

Third Examination.—Mary Gray Jones, Don Adrian Jayasingha, Gilbert Llewellyn Stanley, David Scott Taylor, James Byrne, Stanley Wall Hoyland, Janie Isabel McBirnie, John Lavens West, Michael Campbell, Henry Godfrey Fitzmaurice, Alfred Black, George Lynn Pillans, James Stewart Durward, Reginald John Thomas Malcolm-Gasper, Harold Cranwell Aloysius Haynes, Edwin Butler, and Edward Mervyn Lewis Morgan.

The following candidates, having passed the Final Examination, were admitted L.R.C.P. Edin., L.R.C.S. Edin., L.R.F.P. & S. Glasg.:—

Joseph John Armistead, Kirkcudbrightshire; Edwin Arthur Blok, Panadare, Ceylon; Andrew Mathewson, Newtownstewart, Ireland; William Henry Arthur Douglas Sutton, St. Heliers, Jersey; Octavius Walter Bateman, Cork; John Phillips Fairley, Leith; Edward Albert Neilson, Wellington, New Zealand; Maheput Seeraj, British Guiana; John Wight Robertson, Edinburgh; Joseph Elias Lezama, Trinidad, B.W.I.; William Primrose Walker, Edinburgh; Joseph Sydney Dickson, M.B., Kingston, Ontario, Canada; Douglas Charles Murray Page, Edinburgh; William Turner, Belfast; Archibald Evans, Merthyr Tydfil; Jesudason Sellyah David, Palamcottah, India; Owen Richard Jones, Hucknall, Notts; Alexander Gray McKee, Newbliss, Co. Monaghan; George Edward Mendis, Ceylon; and Thomas Weir Drummond, Greenock.

At recent examinations the following candidates were successful:—

FIRST DENTAL EXAMINATION.

Roelof George du Toit, Jacobus Johannes Stander, and William Kerr.

Chemistry and Physics.—James Rowen Sherrard and Peter Edwin Mallock.

FINAL EXAMINATION.

Anna Grace Laubscher, Lyle Martin Stark, John Thomson Kay, Samuel Hendrik Walters, William Morse Griswold, Louis Bernberg, Alexander Dickson McIlaffie, James Wilfred Thomson, and James Stewart Macpherson.

ROYAL COLLEGE OF SURGEONS OF ENGLAND AND THE WAR.

In the report of the Council which will be laid before the annual meeting of Fellows and Members on Nov. 18th there are several matters of interest connected with the war. Thus we find it stated that seven members of the Council have been granted leave of absence owing to duties in connexion with their service abroad with His Majesty's Forces. Six members of the staff of the College have enlisted in the army for the period of the war, one temporary attendant in the museum has been called up for active service in the Royal Army Medical Corps, and another temporary attendant has also enlisted in the same corps. Further, Mr. R. H. Burne, the physiological curator of the museum, is giving his services in connexion with a voluntary hospital at Dunkirk, under the French Red Cross; and it is proposed to transfer temporarily a pathological attendant in the museum to the Army Medical Service for duties in connexion with the transport to this country of pathological specimens from military sources. In the report we also find the special regulations for the period of the war. In several cases candidates are allowed to present themselves somewhat earlier than would otherwise be allowed. Moreover, time spent as assistant on active service in one of His Majesty's ships or in a naval or military hospital, or any hospital utilised by the naval or military authorities, not exceeding six months, may be allowed to count for the equivalent period of medical and surgical hospital practice and for three months each of medical clinical clerkship and surgical dressership, provided that a satisfactory certificate is produced from the principal medical officer under whom the assistant serves. In the usual lists which are published in the report every year of those Fellows and Members of the College who have died during the preceding 12 months we find a number of names in heavy type; these are the names of Fellows and Members who have died while on active service in His Majesty's Forces. The list includes 3 Fellows and 33 Members. Any Fellow or Member interested can obtain a copy of the report by writing for it.

ROYAL MEDICAL BENEVOLENT FUND.

At the last meeting of the committee held on Oct. 12th, 28 cases were considered and £222 7*s.* were granted to 27 of the applicants. The following is a summary of the cases relieved:—

M.R.C.S. Eng., aged 59, who practised at Stone, Staffs. Had total paralysis in the right side three years ago and unable to do anything. With his wife has been living on the proceeds of the sale of the practice, now practically exhausted. Help wanted towards the purchase of a self-propelling chair. With the help of the Fund's visitor at Bristol a second-hand chair was procured at the cost of £2 5*s.* and becomes the property of the Fund. The applicant has since died.—Widow, aged 41, of L.R.C.P. & S. Edin. who practised at Lincoln and died in 1899. Was left with two children, now aged 18 and 19 years, and has supported herself by nursing since husband's death. Her son, aged 18, just left Epsom College and has joined the army. A little help required for purchase of army equipment. Voted £2 2*s.*—Widow, aged 72, of M.B., C.M. Edin., who practised at Wakefield and New Zealand and died in 1886. Applicant was left entirely unprovided for, and earned a living for a number of years by nursing, but ill-health and old age—in fact she is now bedridden—prevents her from doing anything. Shares a home with a sister. Help wanted for invalid comforts. Voted £5 and referred to the Guild.—Widow, aged 65, of M.R.C.S. Eng. who practised at Swansea and died in 1896. Left the applicant totally unprovided for. Health too precarious to work and only a little from friends. Voted £15.—Widow, aged 57, of M.D. Glasg. who practised at Downe, N.B., and died in 1907. Was left unprovided for at husband's death with two sons, both now married and unable to help. Tries to make a little by taking in boarders, but has none at present. Voted a temporary grant of £2 and referred to the Glasgow branch of the Guild.—Daughter, aged 46, of M.R.C.S. Eng. who practised at Stilton and died in 1881. Applicant has kept a boarding-house at Cambridge for undergraduates and managed to pay her way until the war commenced, but cannot get any boarders now. Voted £10 in two instalments.—Wife, aged 35, of M.B. Dub. who practised in Ireland, but took to drink and drugs and then deserted his wife, who had a baby a few months old. Applicant a trained nurse and able to take a light case, but must be somewhere near her baby. Wants a little help towards the support of the child. Voted £9 in 12 instalments and referred to the Guild.—M.D. Glasg., aged 76, married, and who practised in Harrow-road, has recently had a paralytic seizure and now unable to do any work. Has no means and his wife only a small income of her own. Has three children—two sons abroad and a daughter married; none able to help. Voted £18 in 12 instalments and referred to the Guild.—Widow, aged 61, of L.R.C.P. & S. Irel. who practised in the City of London and died in 1893. Applicant a trained midwife, and managed to make a living until severe illness followed by an operation prevented her from working. Hopes to be able to work again when she is a little stronger. Friends lend a room. Voted £12 in 12 instalments, and referred to the Guild.—Daughter, aged 56, of M.R.C.S. Eng. who practised at Newport (Mon.). Since death of her father in 1892 has managed to make a living by keeping a small school, but owing to the war has lost most of her pupils. Her health is also bad. Has spinal curvature and varicose veins. Voted £12 in 12 instalments.—Widow, aged 81, of M.R.C.S. Eng. who practised at Leeds. Has one invalid daughter who receives some help from the Fund and Guild. Joint income not sufficient to keep them and provide the invalid comforts necessary. £12 voted to the Guild to distribute as they consider best.—Widow, aged 49, of M.R.C.S. Eng., L.R.C.P. Lond. who was a naval surgeon and died in 1904. Help required to assist son who was educated at Epsom College and has now obtained a scholarship at one of the London hospitals. Voted £5, and referred to the Guild.—Widow, aged 65, of M.R.C.S. Eng. who practised in London. Left quite unprovided for at husband's death in 1889. Suffers from chronic neuritis. Three sons married with families only able to help very slightly. Previous relief ten times £126. Voted £12 in 12 instalments, and referred to the Guild.—Widow, aged 56, of M.R.C.S. Eng. who practised at N. Kensington. Until the war managed to make a living by taking in boarders. One son abroad unable to help. Previous relief twice, £20. Voted £10 in two instalments and referred to the Guild.—Daughter, aged 59, of M.R.C.S. Eng. who practised at Dorking and died in 1873. Applicant a trained nurse, but owing to ill-health unable to work. Only income a grant of 5*s.* per week from another charity. Voted £10 in two instalments, and referred to the Liverpool branch of the Guild.—Widow, aged 68, of M.B., B.S. Lond. who practised at Islington. Was left with a very small income on the death of her husband in 1911. Has three sons married, and only able to help slightly. Relieved once, £12. Voted £5.—Daughter, aged 49, of M.D. Glasg. who practised at Glasgow. Applicant tries to make a living by taking in boarders, but owing to the war has not been able to get sufficient to pay her way. Relieved once, £10. Voted £10.—Daughter, aged 57, of M.R.C.S. Eng. who did not practise on account of ill-health. Applicant, who lives in North London, is suffering from cancer, and is quite unable to work. Only income £40 per annum. Relieved once, £12. Voted £12 in 12 instalments, and referred to the Guild.—Widow, aged 62, of M.D. Dub. who practised at Acton and died in 1912. Endeavours to make a little by taking boarders, but has not been very successful lately. Son in South Africa used to help a little before the war, and daughter, an actress, has had very little work of late. Relieved three times, £15. Voted £10 in two instalments.—Daughter, aged 53, of M.R.C.S. Eng. who practised at Birmingham. Applicant lives in a cottage at a seaside resort in Wales and tries to make a living by taking in lodgers, but for the last few years has been very unsuccessful. Eyesight very bad. Relieved four times, £44. Voted 12 in 12 instalments and referred to the Guild.—Daughter, aged 37, of M.R.C.S. Eng. who practised at Streatham and died in 1914. Applicant's only certain income £17 per annum. Health very bad and unable to work. Has earned a little by painting, but no sale for her work at present. Relieved once, £5. Voted £5.—Daughter, aged 62, of M.D. Lond. who practised at Notting-hill and died in 1885. Applicant is blind. Only income a pension from a Blind Society. Relieved three times, £36. Voted £12 in 12 instalments.

The claims of the Fund are steadily increasing largely in consequence of the war, and though the ordinary subscriptions remain at much the same level, there is a constantly increasing adverse balance. Thus in July the deficit was

£535, increasing in August to £575, and in the present month reached the total of £646. To meet this the committee has had to draw heavily upon its limited reserves, and unless increased support be rapidly forthcoming the work of the Fund will have to be very seriously curtailed. Subscriptions may be sent to the honorary treasurer, Dr. Samuel West, 11, Chandos-street, Cavendish-square, London, W.

ROYAL MEDICAL BENEVOLENT FUND GUILD.—A drawing room sale will be held in aid of the funds of the Guild, by kind permission of the Marquis and Marchioness of Crewe, at Crewe House, Curzon-street, W., on Wednesday, Nov. 24th, from 12 to 7 P.M. The Royal Medical Benevolent Fund Guild renders assistance to necessitous relatives of those medical men who, in the practice of their profession, have lost their health or their life without having been able to make adequate provision for their dependents. Owing to the war, applications for help are more numerous and more pressing than ever. Many civilian doctors have been called upon to serve in the field, and the military authorities have borne unstinting testimony to service thus rendered. Those who remain at home should feel it incumbent upon them to make every possible effort to assist such families as require help, and support of the Guild is a practical step in this direction.

The Executive Committee in charge of the sale are: Lady Tweedy, Lady Butlin, Lady Bertrand Dawson, Mrs. Scharlieb, M.D., M.S., Miss May Thorne, M.D., Mrs. Vaughan Sawyer, M.D., Mrs. Willey, M.D., M.S., Mrs. John Phillips, Mrs. Steeves, Mrs. Donald Armour, and Mrs. Swinford Edwards. The stallholders are as follows:—*Cakes, Sweets, Crackers:* Dowager Lady Broadbent, Lady Broadbent, and Lady Critchett. *Chemist:* Mrs. Harold Barwell and Mrs. Stabb. *China and Baskets:* Mrs. Furnivall, Mrs. de Havilland Hall, and Mrs. Fred Smith. *Flowers, Fruit, Vegetables:* Lady Ferrier, Mrs. Halliburton, and Mrs. John Phillips. *House Linen, Handkerchiefs, &c.:* Lady Fripp and Mrs. Hertz. *Miscellaneous:* Lady Pearce Gould and Mrs. Coupland. *Provisions, Poultry, and Game:* Mrs. Ironside Bruce, Mrs. Cole, and Mrs. Steeves. *Packing:* Mrs. Pendlebury. *Soldiers' and Sailors' Comforts:* Mrs. Battle and Mrs. Hawkins. *Toys and Dolls:* Lady Dawson, Miss Ward, and Mrs. Yarrow. Tickets of admission (1*s.*) can be had from Lady Dawson, 32, Wimpole-street, W., and any other stallholders.

CENTRAL MIDWIVES BOARD.—A special meeting of the Central Midwives Board was held at Caxton House, Westminster, on Oct. 28th, Sir Francis H. Champneys being in the chair. A number of midwives were struck off the roll, the following charges, amongst others, having been brought forward: Being in attendance at a confinement, the child being born alive, the midwife falsely gave a certificate that it was stillborn, and when attending patients she did not wear a clean dress of washable material, as required by Rule E. 1.—Neglecting to attend to the comfort and proper dieting of the mother and child during the lying-in period, as required by Rule E. 11; not taking and recording the pulse and temperature of patients at each visit, as required by Rule E. 13; habitually making false records of the pulse and temperature of patients; not being of sober habits, by reason of which she was frequently unable to attend to her duties as a midwife; not making any effort to become acquainted with the use of a clinical thermometer, and disregarding all attempts by the local supervising authority to instruct her.—Presentation being abnormal, the midwife did not explain that the case was one in which the attendance of a registered medical practitioner was required by Rule E 20 (3); she neglected to disinfect her hands and forearms before attending to the patient, in contravention of Rule E. 3, and did not wash and swab the patient with an efficient antiseptic solution, as required by Rule E. 7.—The midwife habitually employing an uncertified woman to attend patients as her substitute, contrary to the provisions of the Midwives Act, 1902, Section 1 (4).

BRITISH HOSPITALS ASSOCIATION.—The annual meeting of this association will be held at the Westminster Hospital, S.W., on Thursday, Nov. 18th, at 3 P.M., when Mr. H. Wade Deacon, chairman of the Royal Infirmary, Liverpool, will preside, and Mr. Sydney A. Smith will read a paper on Provisional Valuations under Finance (1909–10) Act, 1910, as they Affect the Voluntary Hospitals.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

War Casualties.

THE latest published figures relating to war casualties bring the enumeration up to Oct. 9th. The total number of casualties in all the fields of operation is 493,294. Killed number 6660 officers and 94,992 of other ranks. Wounded number 12,633 officers and 304,832 of other ranks. Missing number 2000 officers and 72,177 of other ranks. In the Western area the total casualties are 365,046. Officers killed number 4401, other ranks 63,059. Officers wounded number 9169, other ranks 225,716. Officers missing number 1567, other ranks 61,134. From the previous statement made on Tuesday, Sept. 14th, it appeared that up to August 1st the total casualties numbered 381,983, so that during a period of a little more than two months the losses have been 111,311. That period covered the major portion of the offensive which commenced on Sept. 25th. During those two months 1695 officers were killed.

Mr. Asquith's Speech.

The outstanding feature in the proceedings of Parliament during the last week has been the important statement delivered by the Prime Minister in the House of Commons on Tuesday last. He reviewed the whole war situation, and removed much of the obscurity surrounding the operations in the Near East. It was generally recognised among Members of Parliament that the speech would do much to firm up public opinion. It was permeated by a spirit of courageous determination and a promise of more vigorous measures in the conduct of the war.

HOUSE OF COMMONS.

WEDNESDAY, OCT. 27TH.

Overdue Balances.

Sir PHILIP MAGNUS asked the Comptroller of the Household, as representing the National Health Insurance Commissioners, whether, having regard to the reduced advanced payments to panel doctors consequent upon the depletion of the lists by virtue of the number of insured persons who had enlisted, the gratuitous treatment of necessitous dependents, and the burdens thrown upon doctors in meeting military requirements, he could see his way to accelerate the payment of balances due to medical practitioners for services rendered in the year 1914, and whether he could now name a date when these overdue balances were likely to be paid.—Mr. CHARLES ROBERTS replied: The special difficulties arising out of the state of war which attend the final settlement of medical practitioners' accounts for 1914 have been fully explained to representatives of those practitioners, and I fear that at the present moment I can only assure the honourable Member that the Insurance Commissioners are using their best endeavours to expedite the settlement by all the means within their power.

Sir PHILIP MAGNUS asked whether an approximate date could be given, but Mr. ROBERTS said he would not like to bind himself to a date even approximately. He could assure the honourable Member that he was doing his very best.

THURSDAY, OCT. 28TH.

A Royal Commission's Recommendation.

Mr. GEORGE GREENWOOD asked the Secretary of State for the Home Department if he would say why the recommendation of the Royal Commission on Vivisection in their report of March 1st, 1912, paragraph 122, that the names of the scientific authorities under the Cruelty to Animals Act, 1876, who recommend licences and sign certificates under that Act, should be published has been ignored in successive Parliamentary Returns; and whether he would undertake that in the future such recommendation should be carried into effect.—Sir J. SIMON replied: The paragraph referred to relates to the selection and appointment of an advisory committee, and my predecessor, who consulted the chairman of the Royal Commission as to the precise scope of the recommendation, was informed by him that it was not the intention of the Commission that the names of the persons who recommend licences and grant certificates should be published. The object they had in view was to secure the publication of the names of the persons selected by the Secretary of State to form an advisory committee, and effect has been given to their personal proposal in the annual returns.

Inoculation against Typhoid Fever.

Mr. PARTINGTON asked the Under Secretary for War whether there had been reported to the War Office any, and if so, how many, cases in which pneumonia had supervened upon inoculation for typhoid, and where, in some cases, inoculation had brought on madness and in others led to invalidity, so that men had become totally unfitted for their

duties and been cast diseased upon the world incapable of gaining their livelihood.—Mr. TENNANT in a written answer stated: Such reports as those mentioned in the question have been made to the War Office by the honourable Member for Haggerston (Mr. Chancellor), but not so far as I am aware by other persons. Investigation has been made and it has been proved that the individuals spoken of as having died as a result of inoculation against enteric fever have, in fact, died of some quite ordinary disease. In particular my attention has been called to a speech delivered on Oct. 16th by the honourable Member mentioned, and I should like to say with reference to the statements then made, some of which are reproduced in the question, that they are not only without foundation, but are grotesque misrepresentations of the results of a treatment from which the army has derived incalculable benefits.

Steel Helmets.

Mr. BRYCE asked the Under Secretary for War whether a large number of French troops were provided with steel helmets as long ago as April last and the remainder by July last; whether the percentage of head wounds in French hospitals had in consequence fallen to *nil;* and whether the percentage of such wounds in British hospitals was still very great, amounting in some hospitals to 15 per cent.—Mr. TENNANT in a written answer stated: The object of the introduction of steel helmets in the French army was no doubt to reduce the number of head wounds, and although I have no statistics I hope that it has had that desirable result. I am obtaining information as to the percentage of such wounds in British hospitals, but it is not available to-day. It would be a mistake to suppose that the wearer of one of these helmets is immune from wounds by modern weapons.

TUESDAY, NOV. 2ND.

Sick and Wounded in Gallipoli.

Mr. JOYNSON-HICKS asked the Under Secretary of State for War if he would say how many sick officers and men other than wounded had been removed from the Gallipoli Peninsula since the expedition began; and how many were removed in the months of August and September respectively.—Mr. TENNANT replied: The information available and obtainable does not enable me to give more than approximate figures. Subject to this reservation, the total number of officers and men, including native Indian troops, leaving the peninsula on account of sickness from April 25th to Oct. 20th may be stated as 3200 officers and 75,000 other ranks. Of these two aggregates, 1500 and 27,000 respectively have been removed to England. During the month of August approximately 160 officers and 3500 other ranks, and during September 600 officers and 11,500 other ranks were removed to England on account of sickness, but I cannot give the numbers of those removed from the peninsula in the two months mentioned.

Medical Students and Enlistment.

Mr. SNOWDEN asked the Under Secretary of State for War if the policy of the War Office, as explained by him recently, had been changed in regard to the enlistment of first and second year medical students—namely, that it was neither in the interests of the nation nor the army that they should enlist; if his attention had been called to a notification just made to such students by the university authorities which said that the Medical Council, in consultation with the War Office, had decided that first, second, and third year students might enlist; and would he say if this decision was made with the knowledge of the seriousness of such a step in relation to the future scarcity and efficiency of doctors.

Sir PHILIP MAGNUS also asked the Under Secretary for War whether he was aware that second and third year medical students had received copies of the letter addressed by Lord Derby to unstarred men eligible for military service, and that they were being actively canvassed at their homes to join the army; and whether, having regard to the difficult position in which first, second, and third year students found themselves as to their duty in the matter of joining the forces of the Crown owing to the absence of any definite expression of opinion on the part of the War Office, he would say at what stage in their course of studies the Secretary of State and he concurred in desiring that medical students should answer to the call to join the army, and also at what stage they should remain at college to continue and complete their studies with a view to qualifying as medical practitioners, of whom it was feared there would be a considerable shortage at the close of the war.

Mr. TENNANT, in reply, said: I presume the honourable Member for Blackburn (Mr. Snowden) is referring to the statement I made on June 21st. I would now, in the light of the experience of the last few months, make this modification of that statement. I think we must remember that we have first to win the war and afterwards to encounter problems arising out of it if they do arise. I would therefore answer these questions by saying that the view of the War Office at the present time is that fourth and fifth year students should continue their studies, but that students in the first, second, and third years must consider for themselves what answer they should make to the recruiting appeal addressed to them, and not regard themselves, so far as the War Office is concerned, as under the duty of continuing their medical studies.

Appointments.

Successful applicants for vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET *Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.*

ANDERSON, JAMES G., M.B., Ch.B. Glasg., has been appointed Medical Officer for the Northern District of Grangemouth Parish Council.

ANDERTON, WILLIAM B., M.B. Lond., has been appointed Honorary Pathologist to the Royal Infirmary, Manchester.

COHEN, EVELINE ROSETTA, M.B., Ch.B Edin., F.R.C.S. Irel., has been appointed Temporary Resident Medical Officer at the Brighton Borough Sanatorium.

COOPER, J. S., L.R.C.P. & S. Edin., L.F.P.S. Glasg., has been appointed Temporary Deputy Medical Officer to the Clitheroe Rural District Council.

GADSDEN, ARTHUR HORACE, L.R.C.P. Lond., M.R.C.S., has been appointed Acting Medical Officer and Public Vaccinator for the Fifth District by the St. Columb (Cornwall) Board of Guardians.

KENNISH, JOSEPH, L.R.C.P. & S. Edin., L.F.P.S. Glasg., has been appointed District Medical Officer to the Wandsworth Board of Guardians

O'CONNOR, MARY J., has been appointed Second Assistant Medical Officer to the Borough of Cambridge Asylum.

THORP, ALBERT, M.R.C.S., L.R.C.P. Lond., has been appointed Medical Officer of Health for Holmfirth.

WALSH, E., L.R.C.P. & S. Irel., has been appointed District Medical Officer and Vaccination Officer for the Parish of Ystradgynlais.

WARBURTON, G. B., M.B., Ch B. Manch., F.R.C.S. Eng., has been appointed Resident Surgical Officer at the Royal Infirmary, Manchester.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).

When the application of a Belgian medical man would be considered the advertisers are requested to communicate with the Editor.

BRISTOL GENERAL HOSPITAL.—House Surgeon for six months. Salary as arranged, with board, residence, &c.

BRISTOL, HAM GREEN HOSPITAL AND SANATORIUM.—Assistant Resident Medical Officer. Salary at rate of £300 per annum, with board and residence.

BRISTOL ROYAL INFIRMARY.—House Physicians and House Surgeons. Salary at rate of £120 per annum, with board, apartments, and laundry. Also Dental House Surgeon for six months. Salary at rate of £120 per annum, with apartments, board, and laundry.

BURNLEY, VICTORIA HOSPITAL.—House Surgeon. Salary £135 per annum, with residence, board, and washing.

CHESTER ROYAL INFIRMARY.—House Surgeon. Salary £125 per annum, with board, apartments, and washing.

DERBYSHIRE HOSPITAL FOR SICK CHILDREN.—Female Resident Medical Officer for six months. Salary £150 per annum.

DUDLEY, GUEST HOSPITAL.—Senior Resident Medical Officer. Salary £150 per annum, with board, residence, attendance, and washing. Also Assistant House Surgeon for six months. Salary £120 per annum, with residence, board, and washing.

FOLKESTONE, ROYAL VICTORIA HOSPITAL.—House Surgeon. Salary £200 per annum, with board, lodging, and laundry.

FULHAM TUBERCULOSIS DISPENSARY.—Temporary Medical Officer. Salary £500 per annum.

GREAT YARMOUTH HOSPITAL.—House Surgeon, unmarried. Salary £200 per annum, with board, lodging, and washing.

HEREFORD COUNTY AND CITY ASYLUM, Burghill.—Assistant Medical Officer, unmarried. Salary £250 per annum, with board, lodging, and washing.

HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST, Brompton.—House Physician for six months. Salary 30 guineas. Also Assistant Resident Medical Officer. Salary £100 per annum, with board and residence.

HOSPITAL FOR WOMEN, Soho-square, W.—Resident Medical Officer for two months. Salary at rate of £80 per annum.

INGRESS ABBEY MILITARY HOSPITAL, Greenhithe.—House Surgeon. Salary at rate of £300 per annum, with board, residence, and laundry.

KIRKMABRECK, PARISH OF, Creetown, Kirkcudbrightshire.—Medical Officer. Salary £40 per annum.

LEAMINGTON, WARNEFORD GENERAL HOSPITAL.—Resident Medical Officer. Salary £300 per annum, with board, residence, and laundry.

LEEDS PUBLIC DISPENSARY.—Female Resident Medical Officer. Salary £130 per annum, with board, residence, and laundry.

MIDDLESBROUGH, NORTH RIDING INFIRMARY.—Female Resident Surgeon. Salary £120 per annum, with board, apartments, and laundry.

MORPETH, NORTHUMBERLAND COUNTY ASYLUM.—Female Junior Assistant Medical Officer. Salary £250 per annum, with board, apartments, laundry, and attendance.

QUEEN CHARLOTTE'S LYING-IN HOSPITAL, Marylebone-road, N.W.—Assistant Resident Medical Officer for four months. Also Senior Resident Medical Officer for following four months. Salary at rate of £60 and £80 per annum respectively, with board, residence, and washing.

RICHMOND PARK CAMP, 3/15TH BATTALION LONDON REGIMENT.—Medical Officer (Home Service). Pay Regular Army rates.
SHREWSBURY DISPENSARY.—Medical Practitioner to look after Patients of Medical Officer serving with the Army.
SOUTHAMPTON, FREE EYE HOSPITAL.—House Surgeon. Salary £100 per annum, with board, lodging, and laundry.
STOKE-ON-TRENT, NORTH STAFFORDSHIRE INFIRMARY, Hartshill.—House Physician, unmarried. Salary at rate of £200 per annum, with board, residence, and washing.
VICTORIA HOSPITAL FOR CHILDREN, Tite-street, Chelsea, S.W.—Senior Resident Medical Officer. Salary £250 per annum, with board, lodging, and washing. Also House Physician. Salary £200 per annum, with board, lodging, and washing.
WEST HAM AND EASTERN GENERAL HOSPITAL.—House Physicians and House Surgeons. Salary £120 and £100 per annum respectively, with board, residence, and washing.
WIGAN, ROYAL ALBERT EDWARD INFIRMARY AND DISPENSARY.—Female House Surgeon. Salary £150 per annum, with board, apartments, and washing.

THE Chief Inspector of Factories, Home Office, London, S.W., gives notice of a vacancy for a Certifying Surgeon under the Factory and Workshop Acts at Todmorden, in the county of Yorkshire.

Births, Marriages, and Deaths.

BIRTHS.

BERRY.—On Oct. 26th, at 418, Central Park-road, East Ham, E., the wife of William A. Berry, M.D. Lond., D.P.H. Oxon., of a daughter.
CHILD.—On Oct. 15th, at Leicester House, Henley-on-Thames, the wife of Lieutenant W. N. Child, R.A.M.C., of Lindfield, Sussex, of a daughter.
MACONOCHIE.—On Oct. 25th, at Langton House, Maidenhead, the wife of Lieutenant E. M. D. Maconochie, R.A.M.C., of a son.
MARRETT.—On Oct. 25th, at Merivale, near Chelmsford, Essex, the wife of H. Norman Marrett, M.R.C.S., L.R.C.P. Lond., of a son.
NORBURY.—On Oct. 26th, 1915, at Ladymead, Bursledon, Hants, the wife of Lionel E. C. Norbury, F.R.C.S. (Temporary Captain, R.A.M.C.), of a daughter.
PAUL.—On Oct. 27th, at White Friars, Chester, the wife of Arthur Blackwell Paul, B.A., M.B., B.C. Cantab., of a son.
RANKING.—On Oct 24th, at Hanover House, Tunbridge Wells, the wife of Dr. Robert Ranking, of a son.
VERCOE.—On Oct. 30th, at Old Court, Ealing, the wife of Richard Herbert Vercoe, M.R.C.S., L.R.C.P. Lond., B.A. Cantab., of Southall, Middlesex, of a daughter.
WELCH.—On Oct. 27th, at Copley Park, Streatham, to Dr. S. H. R. Welch and Mrs. Welch, a son.

MARRIAGES.

ALEXANDER—MERCER.—On Oct. 25th, at All Saints Church, Hoole, Chester, Charles Beresford Alexander, Lieutenant, R.A.M.C., to Madge, third daughter of the late John Mercer, of Woodfield, Blackburn.
BOYD—GODSALL.—At the St. Marylebone Parish Church, Thomas Crawford Boyd, Captain, I.M.S., to Dora, daughter of Edward Godsall, of Newcastle-on-Tyne.
COMPTON—BURGESS.—On Nov. 1st, at St. Augustine's Church, S.W., Captain Albert G. W. Compton, R.A.M.C., to Ethel Maisie, youngest daughter of the late Henry Burgess and of Mrs. Burgess, of Guildford, Surrey.
HALLOWS—SMITH.—On Nov. 1st, at the Royal Chapel of St. Katharine, Regent's Park, by permission of Queen Alexandra, Lieutenant Norman F. Hallows, R.A.M.C., and Mary Mallett, only daughter of Mr. and Mrs. J. de Bernière Smith, of Gloucester-gate, Regent's Park.
HODGES—SPRINGMAN.—On Oct. 27th, at the Parish Church of St. Matthew and St. James, Mossley-hill, William Cliff Hodges, M.B. Cantab., M.R.C.S., L.R.C.P. Lond., Captain, R.A.M.C., to Joan, daughter of J. H. Springman, of Mossley House, Mossley-hill, Liverpool.
JOHN—SPENCER.—On Oct. 25th, at St. John's Church, Wembley, Rhys Bevan John, Lieutenant, R.A.M.C., to Katharine Spencer, of the Vicarage, Wembley.
KEANE—DENNY.—On Oct. 28th, at the Parish Church, Wimbledon, Lieutenant Charles George Gordon Keane, R.A.M.C., to Eva Constance, only daughter of Mr. and Mrs. Frank A. Denny.
NEVINSON—KNOWLMAN.—On Nov. 1st, at the Hampstead Town Hall, Christopher Richard Wynne Nevinson, R.A.M.C. (T.), to Kathleen Mary, elder daughter of Mr. C. C. Knowlman, of Highgate.
PEARSON—DAVID.—On Oct. 25th, at St. Stephen's, Spitalfields, Cecil Joseph Herbert Pearson, M.R.C.S., L.R.C.P. Lond., West African Medical Service, to Anne, eldest daughter of Mrs. David, of Pencoed, Glam.
PITTS—MCCARTHY.—On Oct. 30th, at the Parish Church, St. Marylebone, Arthur T. Pitts, Captain, R.A.M.C. (T.F.), to Alexandra Dorothy, eldest daughter of the late Major G. E. McCarthy, Bengal Light Infantry and Devon Regiment.

DEATHS.

LETTS.—On Oct. 21st, at Alexandria, from dysentery, contracted in the Dardanelles, Bertram Chiene Letts, M.B., B.Ch. Belf., Lieutenant, R.A.M.C.
SANDLER.—On Oct. 20th, suddenly, at Constantinople, Dr. David Sandler, Medical Missionary, Church of Scotland Mission.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Short Comments, and Answers to Correspondents.

THE CHAUFFEURS OF MEDICAL MEN.

To the Editor of THE LANCET.

SIR,—With reference to the letter under this heading in THE LANCET of Oct. 30th and the substitution of chauffeurs of non-military age for those who have previously driven cars it is probable that older men may not have such good sight as the younger ones. Owing to the darkened roads and streets and the extra danger to the pedestrian may I suggest that those employing fresh chauffeurs to drive private cars should obtain a certificate of good eyesight of the new drivers. So far as my knowledge goes these certificates, although necessary for drivers of public vehicles, are not demanded for the drivers of private cars.

I am, Sir, yours faithfully,

Oct. 30th, 1915. A PEDESTRIAN.

A NEW BOOK-REST.

WE have received a specimen of a book-rest especially designed to help invalids to read in bed. It is made in the shape of an easel but without the third or back leg. In its place is attached to the apex of the triangle a cord which is passed around the headrail of the bedstead, and which, instead of being tied, is held in position by a clip. The easel measures approximately 20 inches between the bottom legs and has an altitude of 30 inches. It can be adjusted on the knees of the patient by regulating the length of the suspending cord. The shelf on which the book or newspaper is supported has a width of 15 inches, thus efficiently holding a newspaper or large book. The easel is well made and can be folded up flat into small compass. The appliance is called the Burton Portable Book-rest, and can be obtained from Mr. Arthur J. Houghton, of 58, Cromwell-road, Green-street, Forest Gate, London, E. The price suggested is 5s., but special terms will be quoted for hospitals, nursing homes, and similar institutions.

Enquirer.—(*a*) This question cannot be answered definitely. Speaking generally, the consulting staff is, as the name implies, appointed so that the acting staff can consult with it. (*b*) In certain circumstances the consultant might consider it his duty to assist when his presence might exclude a member of the active staff who would otherwise have assisted. (*c*) It is not likely that the constitutions of all hospitals—general, special, rate-supported, and military or naval—would provide the same arrangements for their internal working.

COMMUNICATIONS not noticed in our present issue will receive attention in our next.

Medical Diary for the ensuing Week.

SOCIETIES.

ROYAL SOCIETY, Burlington House, London, W.

THURSDAY.—Papers:—Mr. J. Barcroft and Mr. T. Kato: Effects of Function Activity in Striated Muscle and the Submaxillary Gland.—Sir Ronald Ross: Studies on *a priori* Pathometry. Part I.—Mr. T. Lewis: The Spread of the Excitatory Process in the Vertebrate Heart. Part I., The Toad's Ventricle. Part II., The Tortoise Ventricle. Part III., The Dog's Ventricle. Part IV., The Human Ventricle. Part V., The Bird's Heart. (communicated by Prof. E. H. Starling).—Mr. W. L. Balls and Mr. F. S. Holton: Analyses of Agricultural Yield. Part II., The Sowing-date Experiment with Egyptian Cotton, 1913 (communicated by Dr. F. F. Blackman).—Mr. H. H. Thomas: On Williamsoniella, a New Type of Bennettitalean Flower (communicated by Prof. A. C. Seward).

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MEETINGS OF SECTIONS.

Tuesday, Nov. 9th.

MEDICINE (Hon. Secretaries—Charles R. Box, W. Cecil Bosanquet): at 5 P.M.
Discussion:
On Paratyphoid Fever (opened by Sir Bertrand Dawson and Dr. Dreyer). Sir William Osler will also take part.

HUNTERIAN SOCIETY, 1, Wimpole-street, W.

WEDNESDAY.—9 P.M., Paper:—Dr. R. Wells: Clinical Electro-Cardiography.

MEDICO-LEGAL SOCIETY, 11, Chandos-street, Cavendish-square, W.

TUESDAY.—5 P.M., The President: Opening Remarks. Discussion on "Drunk" in the Eyes of the Law (opened by Dr. F. J. Smith).

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF PHYSICIANS OF LONDON, Pall Mall East.

TUESDAY.—5 P.M., FitzPatrick Lectures:—Dr. W. H. R. Rivers: Medicine, Magic, and Religion. (Lecture II.)

POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.

MONDAY.—10 A.M., Dr. Simson: Diseases of Women. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. D. Armour: Operations. Dr. Pritchard: Bacterial Therapy Department. Mr. B. Harman and Mr. Gibb: Diseases of the Eye.

TUESDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Baldwin: Operations. Dr. Banks Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.

WEDNESDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Banks Davis: Operations of the Throat, Nose, and Ear. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations. Dr. Simson: Diseases of Women. Mr. Gibb: Diseases of the Eye.

THURSDAY.—9 A.M., Dr. Bernstein: Bacterial Therapy Department. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. D. Armour: Operations. Mr. B. Harman: Diseases of the Eye.

FRIDAY.—10 A.M., Dr. Simson: Gynæcological Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Baldwin: Operations. Dr. Banks Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.

SATURDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Banks Davis: Operations of the Throat, Nose, and Ear. Mr. B. Harman: Eye Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations.

THE THROAT HOSPITAL, Golden-square, W.

MONDAY.—5.15 P.M., Special Demonstration of Selected Cases.

THURSDAY.—5.15 P.M., Clinical Lecture.

CHADWICK PUBLIC LECTURES, Royal Institute of British Architects, Conduit-street, W.

WEDNESDAY.—8.15 P.M., Mr. A. S. Snell: Emergency Military Hospital Construction (illustrated by lantern slides).

UNIVERSITY OF BIRMINGHAM, Medical Lecture Theatre.

WEDNESDAY.—5 P.M., Ingleby Lectures:—Prof. D. Stanley: Pneumonia and its Sequelæ in Children. (Lecture II.)

For further particulars of the above Lectures, &c., see Advertisement Pages.

The following magazines, journals, &c., have been received:—
Pacific Medical Journal, Interstate Medical Journal, Medicina Militar, Papers from the Parke Davis Research Laboratory, Homœopathic Recorder, Philippine Journal of Science, Journal of Anatomy and Physiology, Journal of Laboratory and Clinical Medicine, Practitioner, Annales de Gynécologie et d'Obstétrique, Journal of the Royal Sanitary Institute, National Medical Journal, British Journal of Dermatology, Candid Quarterly Review.

EDITORIAL NOTICES.

IT is most important that communications relating to the Editorial business of THE LANCET should be addressed *exclusively* "TO THE EDITOR," and not in any case to any gentleman who may be supposed to be connected with the Editorial staff. It is urgently necessary that attention should be given to this notice.

It is especially requested that early intelligence of local events having a medical interest, or which it is desirable to bring under the notice of the profession, may be sent direct to this office.

Lectures, original articles, and reports should be written on one side of the paper only, AND WHEN ACCOMPANIED BY BLOCKS IT IS REQUESTED THAT THE NAME OF THE AUTHOR, AND IF POSSIBLE OF THE ARTICLE, SHOULD BE WRITTEN ON THE BLOCKS TO FACILITATE IDENTIFICATION.

Letters, whether intended for insertion or for private information, must be authenticated by the names and addresses of their writers—not necessarily for publication.

We cannot prescribe or recommend practitioners.

Local papers containing reports or news paragraphs should be marked and addressed "To the Sub-Editor."

Letters relating to the publication, sale, and advertising departments of THE LANCET *should be addressed "To the Manager."*

We cannot undertake to return MSS. not used.

MANAGER'S NOTICES.

TO SUBSCRIBERS.

WILL Subscribers please note that only those subscriptions which are sent direct to the Proprietors of THE LANCET at their Offices, 423, Strand, London, W.C., are dealt with by them? Subscriptions paid to London or to local newsagents (with none of whom have the Proprietors any connexion whatever) do not reach THE LANCET Offices, and consequently inquiries concerning missing copies, &c., should be sent to the Agent to whom the subscription is paid, and *not* to THE LANCET Offices.

Subscribers, by sending their subscriptions direct to THE LANCET Offices, will ensure regularity in the despatch of their Journals and an earlier delivery than the majority of Agents are able to effect.

THE COLONIAL AND FOREIGN EDITION (printed on thin paper) is published in time to catch the weekly Friday mails to all parts of the world.

ALTERATION OF INLAND SUBSCRIPTION RATES.

OWING to the alteration in the Inland Newspaper Postal rate, the postage on each copy of THE LANCET will in future be 1*d.*, and sometimes 1½*d.*

The revised Inland Subscription rates are:—

One Year	£1	3	3
Six Months	0	13	8
Three Months	0	7	0

The rates for the Colonies and Abroad (thin paper edition) will be as usual:—

One Year	£1	5	0
Six Months	0	14	0
Three Months	0	7	0

Subscriptions (which may commence at any time) are payable in advance. Cheques and Post Office Orders (crossed "London County and Westminster Bank, Covent Garden Branch") should be made payable to the Manager, MR. CHARLES GOOD, THE LANCET Offices, 423, Strand, London, W.C.

TO COLONIAL AND FOREIGN SUBSCRIBERS.

SUBSCRIBERS ABROAD ARE PARTICULARLY REQUESTED TO NOTE THE RATES OF SUBSCRIPTIONS GIVEN ABOVE.

The Manager will be pleased to forward copies direct from the Offices to places abroad at the above rates, whatever be the weight of any of the copies so supplied.

NEWSPAPERS FOR NEUTRAL COUNTRIES.

THE Secretary of the War Office has issued the following order:—

The public are informed that on and after Saturday, November 6th, newspapers, magazines, books, and other printed publications (other than trade circulars) will not be sent forward to neutral European countries unless posted direct from the office of publishers or newsagents who have obtained permission from the War Office for this purpose. Persons desiring to send newspapers, &c., to neutral European countries should, therefore, give their orders for execution to publishers or newsagents who have obtained such permission.

The Publisher of THE LANCET has obtained the required permission of the War Office, and he will forward copies direct from the Office to any neutral country on receipt of instructions.

METEOROLOGICAL READINGS.

(Taken daily at 9.30 a.m. by Steward's Instruments.)

THE LANCET Office, Nov. 3rd, 1915.

Date.	Barometer reduced to Sea Level and 32° F.	Direction of Wind.	Rainfall.	Solar Radio in Vacuo.	Maximum Temp. Shade.	Min. Temp.	Wet Bulb.	Dry Bulb.	Remarks.
Oct. 28	29·490	S.	0·20	66	54	44	46	48	Raining
,, 29	29·690	S.W.	...	70	53	42	42	42	Foggy
,, 30	29·910	E.	...	58	53	39	41	41	Foggy
,, 31	29·530	E.	0·83	58	50	38	40	41	Raining
Nov. 1	29·620	N.E.	0·35	55	51	41	49	50	Raining
,, 2	29·660	N.	...	79	49	41	41	42	Cloudy
,, 3	29·726	N.	...	73	48	38	37	39	Cloudy

Communications, Letters, &c., have been received from—

A.—Messrs. Allen and Hanburys, Lond.; Mr. F. Aldridge, Lond.; Alexandria Therapeutic Institute, Lond., Secretary of; Messrs. Arnold and Sons, Lond.; Army Medical Services, Lond., Director-General of; Captain Adolphe Abrahams, R.A.M.C.

B.—Messrs. Bedford and Co., Lond.; Messrs. Baillière, Tindall, and Cox, Lond.; Mr. G. F. Berry, Lond.; Mr. R. W. Burkitt, Nairobi; Messrs. Burroughs Wellcome and Co., Lond.; Surgeon T. S. Bradburn, R.N., Lond.; Messrs. F. P. Baker and Co., Lond., *Berrow's Worcester Journal*, Manager of; Mr. A. Baudouin, Lond.; British Hospitals Association, Lond., Hon. Secretary of; Sir Lauder Brunton, Bart., Lond.

C.—Lieutenant-Colonel E. R. W. Carroll I.M.S., Brockenhurst; Contra-Toxin Laboratory, Lond.; Mrs. Cullinan, Sandyford; Dr. H. Warren Crowe, Yelverton; Messrs. Carnrick and Co., Lond.; Messrs. Condy and Mitchell, Lond.; Chester Royal Infirmary, Secretary of; Central Medical War Committee, Lond., Secretaries of; Dr. Frank Clifford, Swansea; Dr. J. Mitchell Clarke, Clifton; Mr. F. G. Chandler, Lond.; Dr. P. E. Carroll, Walsall; Dr. Ivo Geikie Cobb, Lond.; Dr. C. F. Coxwell, Lond.; Captain F. D. Cairns, R.A.M.C., France; Chadwick Trust, Lond., Secretary of.

D.—Mr. A. J. Davy, Lond.; Messrs. Dawson and Sons, Lond.; Mr. L. Dehorter, Calais; Mr. John Dunlop, Lond; Mr. R. Donald, Lond.; Captain H. B. F. Dixon; Dr. Vincent Dickinson, Lond.; Mr. A. Victor Dyer, Harrogate.

E.—Mr. D. L. Eadie Edinburgh; Dr. G. Espejo, New York; Messrs. Evans, Sons, Lescher, and Webb, Liverpool; Enquirer.

F.—Mr. W. M. Fletcher, Lond.; Falmouth, Town Clerk of; Messrs. Fletcher, Fletcher, and Co., Lond.; Factories, Chief Inspector of, Lond.; Mr. Charles Forbes, Aberdeen.

G.—Dr. Lewis G. Glover, Lond.; Dr. A. Gubb, Aix-les-Bains; Guest Hospital, Dudley, Secretary of; Mr. J. T. Agg Gardiner, M.P., Cheltenham; Great Yarmouth Hospital, Hon. Secretary of; G. R. R.

H.—Major W. G. Hamilton, I.M.S., Egypt; Hereford County and City Asylum, Burghill, Clerk of; Messrs. C. J. Hewlett and Son, Lond.; Hunterian Society, Lond.; Dr. Francis Hare, Beckenham Park; Dr. R. R. Hunt, Brighton; Messrs. Harman Bros., Lond.; Hospital for Consumption and Diseases of the Chest, Lond., Secretary of; Dr. Hayburn, Bradford.

I.—Messrs. Isaacs and Co., Lond.; Ingress Abbey Military Hospital, Greenhithe, Hon. Secretary of; Insurance Committee for the County of London, Clerk of; International News Co., Lond.

J.—Lieutenant-Colonel Sydney Jamieson.

K.—Messrs. H. S. King and Co., Lond.; Dr. B. L. Kalra, Dholpur; Kirkmabreck Parish Council, Creetown, Inspector of the Poor of; Messrs. J. G. King and Son, Lond.

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